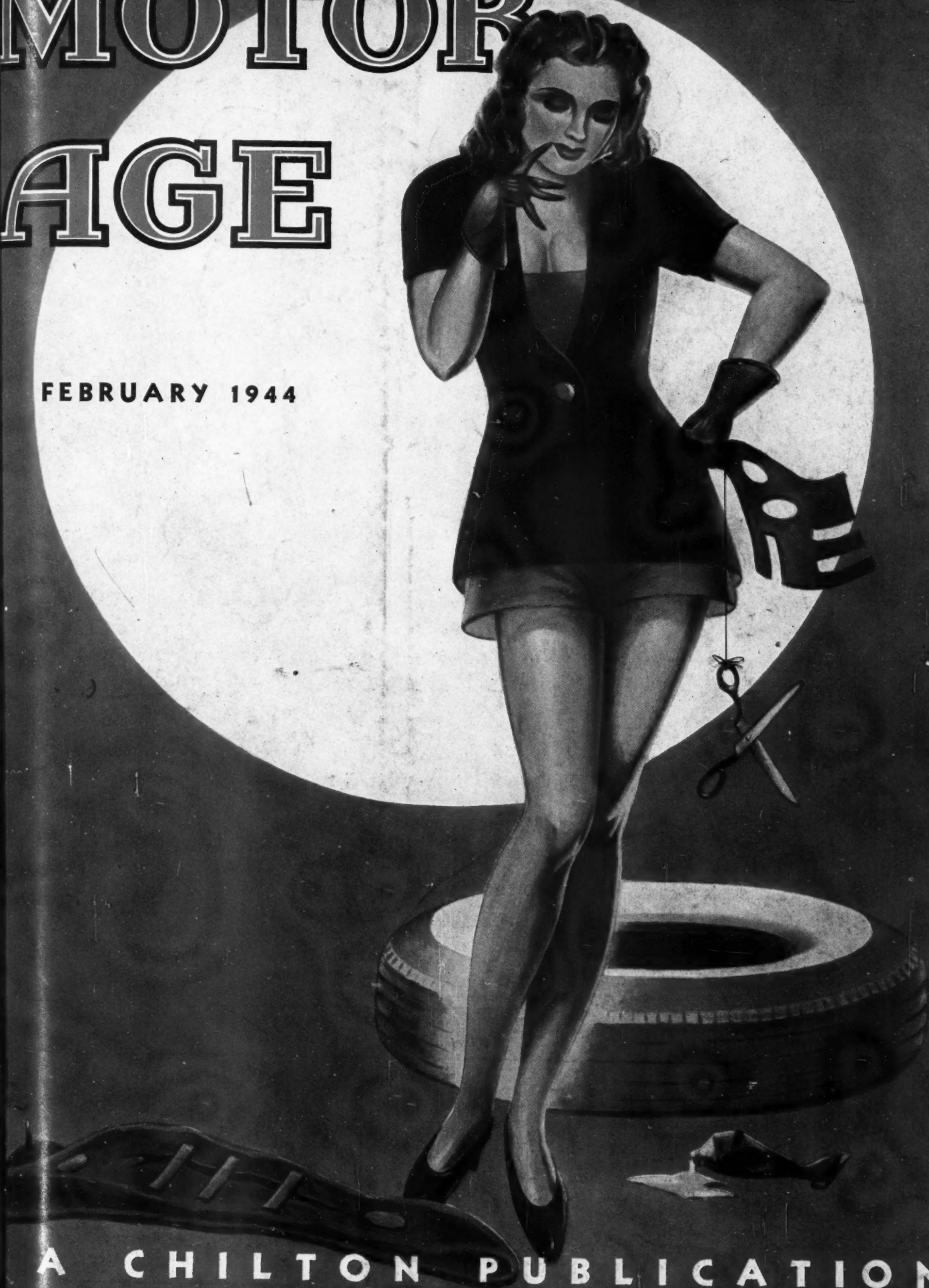


MOTOR AGE

FEB 26 1944

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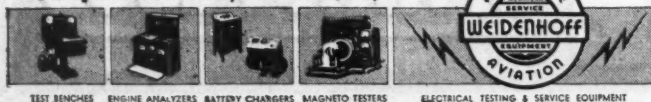
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MOTOR AGE

With Which is Combined AUTOMOBILE TRADE JOURNAL

FOR AUTOMOTIVE SERVICEMEN

Vol. LXIII, No. 3

February, 1944

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Detroit 2, Mich.—1015 Stephenson Bldg., Phone Madison 2090, Cleveland 14, Ohio—609 Guardian Bldg., Phone Cherry 4188, Washington 4, D.C.—1061 National Press Bldg., Phone District 8109, 8110, San Francisco 5, Cal.—605 Market St., Room 708, Phone Douglas 0967, Los Angeles 1, Cal.—6000 Miramonte Blvd., Phone Lafayette 5525. Member of Audit Bureau of Circulations. Member of Associated Business Papers, Inc. Subscription Price: United States and Possessions, Latin-American Countries, \$3.00 per year; Canada and foreign, \$5.00 per year. Single copies, 25c.

Owned and Published by
CHILTON COMPANY
(Incorporated)

Executive Offices

Chestnut and 56th Streets, Philadelphia 39, Pa., U. S. A.

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MOTOR AGE

FEBRUARY, 1944



SLANTS ON THE NEWS

Reconversion? It Depends On What's Meant by Term

WHILE Donald Nelson's warning that the country cannot expect resumption of civilian production on a volume basis until the war has been won may be accepted at its face value, reconversion actually is under way on a limited scale.

There is the instance of the J. I. Case Co., with plants at Rockford and Rock Island, Ill.; Racine, Wis., and Burlington, Iowa. According to Loren R. Clausen, president, the company will have ceased to produce war goods altogether by March, and will be turning out farm equipment at 80 per cent of its pre-war average. The program, it is reported, will be closely paralleled by International Harvester.

Recent action of the WPB in permitting production in limited quantities of bath tubs, safety razors, and electric irons indicate the trend. Necessary replacement of essential articles is to be made as material and labor become available.

The other day Nelson announced that experiments in reconversions, as a guide to post-war procedure, would be undertaken at Philadelphia, Cleveland, and Kansas City, Mo. No doubt the plants to be reconverted under the program will represent only a small fraction of

the nation's peacetime productive capacity, but their products will swell the volume of civilian goods. Automotive parts and supplies cannot well fail to be among them.

At Least It's a Break For the Used-Car Dealers

ACCORDING to a United Press story from Washington, Chester Bowles, OPA administrator, has not set used-car ceiling prices through fear that such action would do no more than create another black market. The same reasoning, applied to other commodities, would lead to the lifting of most ceilings, yet the delay in setting used-car prices is welcomed by dealers.

It is rumored, though not officially confirmed, that no ceilings will be imposed on used cars until the present stock of new cars has been exhausted. At last account, only about 60,000 new cars were still on hand. Unless quotas are cut drastically, the supply will last three or four months at most.

Failure of pistons and rings, increasing because of wartime conditions, has been the subject of serious study by engineers. The conclusions of one expert as to the remedies are to be found in a timely article on Page 20.

New Cars to Be Needed Before the War Ends

RESUMPTION of car production sometime during the next six months is regarded as a possibility by some Detroit authorities. Naturally no one expects unlimited production, but there are many points which indicate the possibility and the need for an early start of car manufacturing in limited quantities. It is considered significant that passenger-car factories recently assigned executives to Washington to work with the WPB on "post-war" planning.

In this connection, it is interesting to note that C. E. Wilson of the WPB has stated that materials are now available for limited production, but added that the availability of manpower would be the factor which would decide when production could start. While it remains for the government to decide when sufficient labor can be spared from the manufacture of munitions, even the most casual reader of news must be aware that many plants are reducing the number of employees. For instance, in addition to laying off 1,500 employees, the Thompson Products Co. in Cleveland recently shortened the work week of 14,500 employees from 6½ to 5½ days.

One important question which arises in connection with the resumption of partial production is

which factory or factories will be selected to manufacture these cars. Because of the interference with war production, it is extremely doubtful that all car factories will be permitted to start production at the same time, even though such production was on a pro rata basis. Affecting as it does not only the factories involved but also the dealers who will sell these cars, the question becomes one of the most difficult in the entire reconversion problem.

At Least You Can Dream About Hiring Another Man

THE demand for automobile service shows no signs of letting up. Shortages and restrictions and cars being taken off the road have not been able to halt the upward swing. Evidence of this is to be found in any repair shop. In fact, if the men were available, the volume would be far greater.

It is estimated by the Pontiac Motor Division, for example, that if each Pontiac dealer could hire one more mechanic the total repair volume of all Pontiac dealers would be increased by \$400,000 a month.

Incidentally, Pontiac dealers last October broke their own record for service sales for the eighth straight month, with the biggest month since November, 1941, and a volume larger than October, 1942, by 33 per cent.

OPA Working Plan For Higher Shop Prices

THE OPA has been working on a new schedule of ceiling prices for automotive repairs. The purpose is to permit shops to charge higher prices for their work. It will probably be some months before the new schedule is approved and becomes a regulation.

One thing that has been worrying some OPA members is that they do not have any clear indication of how much attention anyone has been paying to the present regulation.

WPB to Have Hard Job Selling Post-War Quotas

WPB made the newspapers last month when one of its members said publicly that passenger-car manufacturers should be put on quotas for three years after the end of the war. The purpose would be to prevent the manufacturer who was able to convert quickly from taking advantage of his slower competitors. This was an excellent suggestion to get someone a little personal publicity, but the chances of peacetime quotas getting much consideration now are slight. Certainly the automobile industry is opposed to any such regimentation after the war. Competitive considerations will be overshadowed by the necessity of avoiding unemployment. Any plan that would keep men standing around idle when they could be gainfully employed, except for the contrary-minded WPB, will have hard sledding.

Flat Price Not Flat Rate In New OPA Dictionary

IN a recent explanation, the OPA draws an odd distinction between "flat price" and "flat rate."

The reason for the explanation was the earlier action of the OPA in permitting repair shops to pass along to the customer any expense incurred as the result of increasing shop wages. Permission to adjust prices was extended, the supplementary regulation stated, only to persons performing services covered by MPR 165 whose maximum prices are based upon a customer's hourly charge for labor.

Flat-rate manuals were accepted by the OPA as representing shops' maximum prices under the regulation, but the new explanation denies that all jobs sold at a flat price are "flat rate." Examples cited are car washing and lubrication. These, it is held, are sold customers at a flat price and, therefore, the price cannot be adjusted upward.

The assumption seems to be that prices for car washing and lubrica-

tion are not "based upon a customer's hourly charge for labor." This seems curious, since labor costs are perhaps the important factor in any price. When grease-rack men were paid \$15 to \$18 a week, lubrication jobs could be sold for a good deal less than they can when the same men, or their successors, are paid \$35 to \$40 a week. This being true, there seems to be no valid reason why car-washing and lubrication prices should not be adjusted along with other service charges.

Strain on Manpower Shows Signs of Easing

DESPITE the conflicting statements issued from time to time by various war agencies concerning the manpower situation, it is becoming evident that manpower is less of a bottleneck now than it was a few months ago. Reports drifting in from different sections of the country disclose that a plant making automotive valves has discharged 1,500 men and reduced the working time of 14,500 others by a full day a week, that small aluminum plants are shutting down, that a plant making aviation instruments has fired 1,000 workers, that a steel mill, like two TNT plants, has locked its gates permanently.

It is explained by USES offices that these lay-offs result from cut-backs in certain types of war production and that the men involved are idle only temporarily, being soon placed in other vital industries. No doubt this is true at the moment, yet it may be reasoned that cut-backs in the production of such basic materials as steel and aluminum must inevitably result in lower employment in the production of finished products.

The Truman Committee declared frankly that unemployment might be a problem late this year. Further, shortening of the work week, as represented in the case of the valve manufacturer and in the Maritime Commission ban on Sunday work in shipyards this year,



SLANTS ON THE NEWS

will bring thousands of idle man-hours if not idle men. Some automotive shops have continued to operate during the most acute period of manpower shortage only because they were able to use workers that had already put in a full day at a war plant.

How many men being released from the Army and arms industries can be employed by automotive shops is a question still to be answered, yet it does not seem unreasonable to hope that some will find their way back to their old shops.

Recall Sales Contests? They've Started Again

WE dropped into a jobber's last week to renew an old acquaintance and to chat about this and that. The jobber was working on some charts.

"Just mapping out a couple of sales contests," he explained, moved possibly by our questioning look, which quickly changed to one of surprise.

"A sales contest," we gasped.

"Yes, we're running one on mufflers and another on oil filters. They've been coming through in such large volume we can really go out and sell them."

The incident did not convince us that the war was over or even that the era of restrictions is about to end. Yet the fact that a sales contest was being held made us think of happier times.

It is worth recording, also that most parts are in better supply than they have been for months. Some jobbers, finding that forward orders are coming through in such good volume, have had to cancel orders on certain items. Hand tools, however, are still far from plentiful.

With the supply of many metals becoming easier, and the WPB following its announced plan of providing more civilian goods, it may be hoped that the worst is past so far as replacement parts are concerned.

Trucks for Civilians May Have Military Lines

THE optimism relative to parts manufacture is not contagious enough to have spread to the civilian-truck program. Just to show what manufacturers think of the civilian program, a committee of manufacturer's representatives has already been organized to make recommendations of units for the civilian program that should be made to military specifications rather than civilian specifications. So built, the trucks could be withdrawn from the civilian pool for military or Lend-Lease purposes.

Army Finds That Quality Of Synthetic Improves

TO those of us who believe that the reports of the government rubber agencies on the life of synthetic tires were on the pessimistic side the statements of Lt. Col. B. J. Lemon and Capt. J. J. Robson, of the Army Ordnance Dept., which were made at the annual meeting of the Society of Automotive Engineers in Detroit are particularly interesting.

The Army officers declared synthetic tires are satisfactory and the popular passenger-car sizes give 10,000 miles' wear at high speeds and under conditions worse than those encountered by civilians. They reported that medium-size tires, which initially were subject to chip-

ping and cracking, have been improved to give 10,000 to 18,000 miles of service. While Lemon and Robson did not claim that synthetic tires are as good as natural rubber, they did report that the gap between the two is decreasing.

Ford's \$5-a-Day Wage Would Make No Stir Now

IT was noted by a columnist in Detroit last month that Jan. 5 marked the thirtieth anniversary of Henry Ford's epochal introduction of the \$5-a-day minimum wage. Boys leaving high school today to take jobs at \$10 and \$12 a day in war plants could scarcely be expected to understand the furor created by the Ford announcement.

The \$5 minimum applied even to common laborers, who in other fields often worked in 1914 for as little as \$1.50 a day. The basic scale in the Ford plant had previously been only \$2.34.

Today Ford's average hourly wage scale is \$1.25, twice as much for an eight-hour day as the minimum which set industry by the ears 30 years ago.

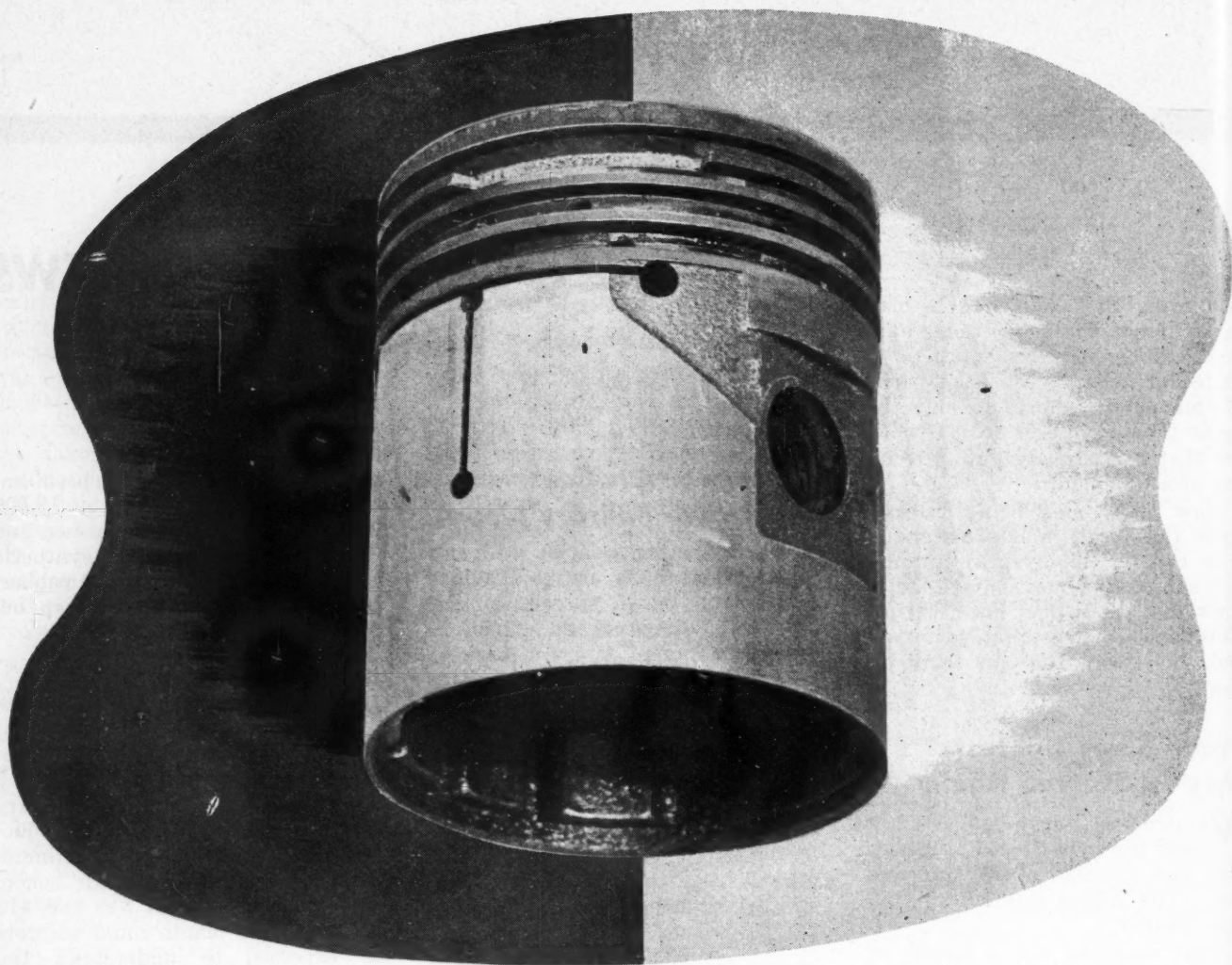
If all of us could double our income in the next 30 years, we might expect to be able to start paying off some of the national debt.

New Materials Face Fight For Place in Post-War Car

A LIVELY discussion developed at the recent SAE meeting at Detroit over the use of plastics, light metals, and other comparative novelties in the post-war "dream" car. Some engineers declared emphatically that too much speculating was being done about war-popularized materials in peacetime

(Continued on page 64)

How can a dealer shop double its service volume in the situation he faces today? You will find the answer in the article that starts on Page 24. Then on pages 30 and 31, there is a story in pictures on repairing synthetic-rubber tires. With these tires coming into use, the article is one you'll wish to read.



Preventing RING and PISTON Failure

A timely discussion of the means that must be used
to offset the damaging effect of wartime conditions

Post-War Car
2 Face Fight

INCREASED numbers of broken piston rings and ring lands and scuffed pistons are among the many difficult wartime problems with which automotive repairmen have to contend.

Such breakage and failures are the direct result of the new conditions, which started with fuel rationing, reduction in the octane

rating of gasoline, poorer quality of gasoline, slower driving speeds, greater percentage of short trips and lower oil quality. The scarcity of skilled mechanics and the use of wartime parts have tended to increase the extent of such difficulties.

In order to do a good job of replacing such parts, and at the

same time insure as much as possible against the early recurrence of similar failure, it is necessary to make a careful examination of the parts to determine the conditions which lead up to the premature failure.

In commenting on these conditions, Lee Doty, of the Koppers Co., American Hammered Piston

Ring Division, told a recent meeting of the Society of Automotive Engineers that, in the cases of ring and land breakage, the cause was never lack of lubrication. While some mechanics may at first believe that insufficient oil will result in broken rings and ring lands, actually pistons will scuff and score and the rings will freeze tight in their grooves before the rings or ring lands will break. However, the blow-by which occurs under certain conditions of insufficient lubrication will cause breakage of rings and ring lands by the excessive heat which is developed and which in turn will cause the rings to stick in the grooves.

The first thing to do under such conditions is to determine whether the land or the ring broke first. This can be done by a careful examination of the broken parts. Naturally, an accurate diagnosis can be made only if the car is not driven too great a distance after the failure occurs. If the ring is broken diametrically opposite to the ring gap, the break is the result of some defect in the piston, as that is the strongest part of the ring. The ring land should also be carefully examined and, if there are indications that broken parts of the rings have been "hammered" into the land, it is an indication that the ring broke first.

If the ring land broke first, the land will be tapered away from the break, starting at the break, where the land may be worn approximately halfway through, back for a distance of approximately 1 or 2 in., where the land assumes its normal width.

This condition is brought about by lack of support at one point in the land, allowing the rings to flex and causing wear on the ring land at each side of the break, moving progressively away from the break as operation continues.

The one condition which is behind such ring and land breakage is detonation, according to Doty. The fact that ring or piston failure was caused by detonation usually can be determined only by the elimination of the other factors which may cause ring-land or piston-ring failure.

Of course, it is important to install piston rings correctly and that the pistons should be in good condition in order to insure

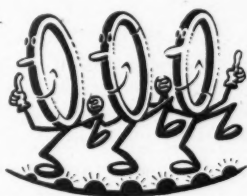
against breakage. In this connection, it is important that the rings be free in the grooves and have the proper gap. Naturally, the ring grooves should not be worn and, if necessary, the grooves should be turned to the next larger over-size. It is also imperative to remove the ridge from the top of the cylinder before removing the piston assembly. If this is not done, the rings, striking this ridge when the piston is being removed from the cylinder, will frequently break or fracture the ring land.

When installing new pistons, it is important that they be given the correct clearance. In addition, a good ring clamp should be used to prevent the rings from striking the bore when being installed and possibly breaking the lands.

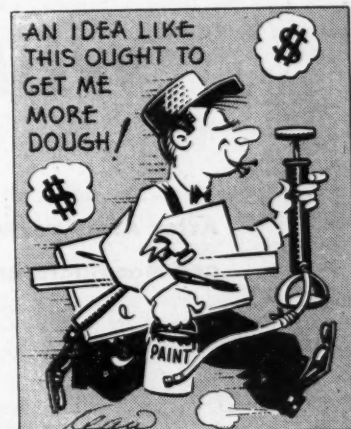
Modern slow-speed, short-trip driving tends to form sludge in the crankcase and this sludge will clog oil lines. Naturally, such conditions will cause pistons to score and bearings to fail. More frequent oil changes and better servicing of oil filters will do much to eliminate this condition from the list of wartime service troubles. Sludge will also cause blow-by, which will soon solidify the deposits around the oil rings, making it necessary to overhaul the engine.

Doty also emphasized the importance of using a torque wrench when overhauling an engine in order to keep cylinder distortion at a minimum. Another cause of cylinder distortion is local hot spots in the water jacket. Such a condition is the result of clogged water jackets, so a thorough cleaning of the water jacket should be included with every engine overhaul.

Particular care must also be exercised when installing the dry type of cylinder sleeve. Otherwise, the sleeve may be partly crushed while being installed, causing waves in the sleeve and poor contact with the bore. When installing such thin-wall cylinder sleeves, it is imperative that the sleeve and cylinder block be thoroughly cleaned with a steel brush in order to remove all dirt and rust. When making the installation the sleeve should not be pressed into place but should first be shrunk by being placed in dry ice.



BUTCH . .





To Pack or Not to Pack WHEEL HUBS

**After Army revives old question, truck operators
and manufacturers debate wisdom of the practice**

SHOULD front wheel hubs be packed with grease? This is a question which has been debated by the industry, both manufacturing and service, for many years. Recently, added heat was given to the argument when "Army Motors," published by the Maintenance Branch-Tank Automotive Center, printed an article on the subject, and a directive by the Chief of Field Service was required to still the ensuing controversy.

In an endeavor to determine the position of the automotive industry, "Commercial Car Journal," another Chilton publication, surveyed the axle, bearing, truck and lubricant manufacturers, as well as

truck fleet operators. The results have been particularly interesting, but the opinions of the manufacturers are about equally divided, while the fleet operators are strongly opposed to packing the hubs with grease.

Those advocating the packing of the hubs with grease believe that this lubricant will form a dam so that the grease on the wheel bearings will not be able to flow away from the bearings when it gets hot. With no grease in the hub, the wheel-bearing lubricant, when warm, would flow from the bearings into the hub and the bearing would soon burn from lack of lubrication. It is believed that the lubri-

cant which is placed in the hub will melt and flow to the bearings and provide additional lubrication as needed.

Those opposed to filling the hubs with grease asserted that such lubricant would soon get warm and force its way past the grease seals, with the result that brake lining would soon become soaked and have to be replaced.

As previously pointed out, the controversy was finally settled for the Army by a directive from Brig. General Julian S. Hatcher, who ruled that wheel hubs should not be packed.

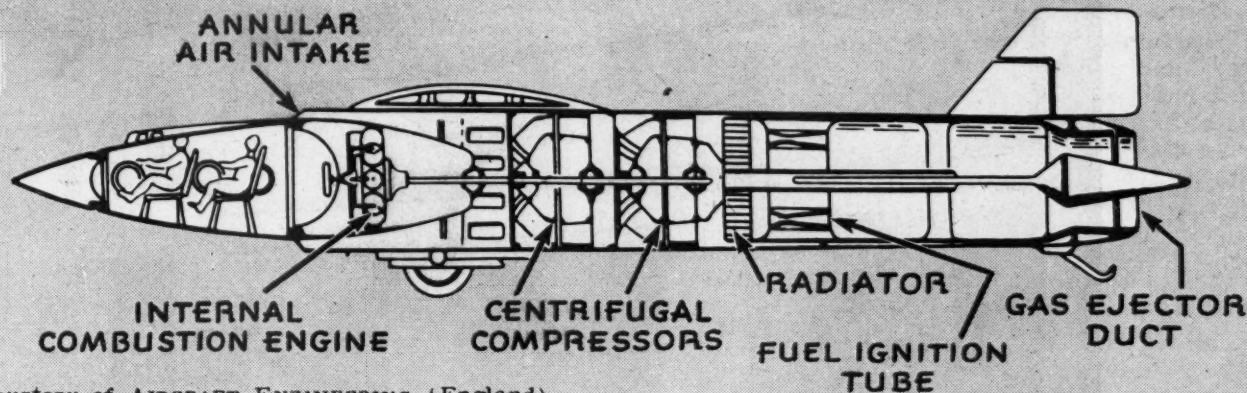
In the investigation conducted by "Commercial Car Journal," two axle manufacturers submitted their views and favored packing the hubs with grease. Of five bearing manufacturers interviewed, three recommended packing while two opposed it. The nine oil companies contacted were nearly unanimously against packing—one being for packing and eight against. Of the ten truck manufacturers who expressed an opinion, eight believed it advisable to pack wheel hubs while two thought it unnecessary.

Adding this score of the manufacturers, we find them equally divided, 13 holding out for lubricant in the wheel hubs and an equal number disagreeing with that practice.

The operators—that is, the men responsible for the operation of fleets of trucks—presented a different picture, however. Here 16 service supervisors and maintenance men stated that their experience proved that, when wheel hubs were packed with lubricant, trouble was bound to follow, while only six fleet operators were advocates of packed wheel hubs. As the Army may, in this instance, be classed as a fleet operator—and a big one—the complete vote of this group is 17 to 6, virtually 75 per cent being opposed to the use of grease in wheel hubs.

The reasons given most frequently by the fleet operators who believed that filling the hubs with grease is detrimental are that the practice wastes lubricant, it ruins brake lining, and that it reduces the life of bearing oil-seals. The opposing arguments were that grease in the hub provides emergency lubrication and that, with the hub filled, the grease from the bearings will not be lost in the hub.

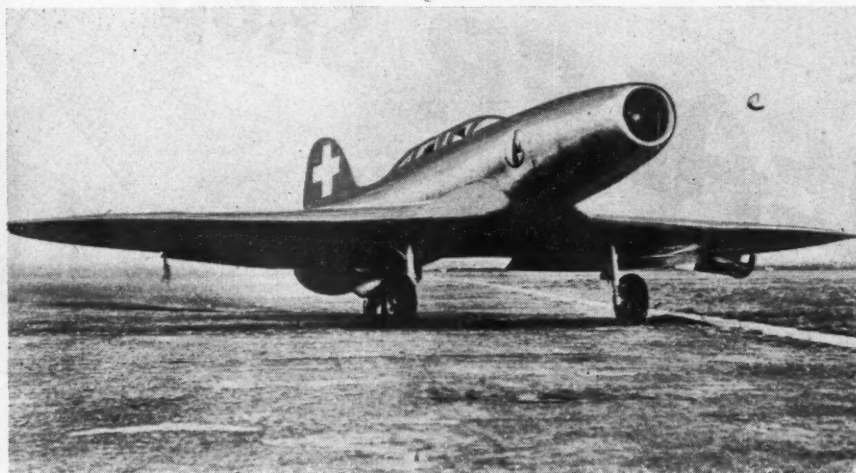
Possibly the unanimity of the servicemen, backed up by the manufacturers of lubricants, will cause the opposing engineers in Detroit to reconsider their decision.



Courtesy of AIRCRAFT ENGINEERING (England)

Principles of propelling an airplane by means of heated gas are shown in this patent drawing of a system developed by Secondo Campini.

2,200 M. P. H. PLANES?



Caproni-Campini propellerless plane, which made a successful flight in Italy in 1940.

New Anglo-American fighter plane revives interest in jet-propulsion method of attaining high speeds

WHEN British and American air authorities announced recently that a revolutionary jet-propulsion fighter plane had gone into production, civilians in this country were left to imagine what manner of craft the new fighter might be. Even if they knew something about the principle of jet-propulsion, they wondered which, if any, of the several known designs is being used. Details, of course, are a military secret and are likely to remain so until after

one of the new ships falls into enemy hands.

It is interesting, meanwhile, to learn that jet-propulsion is not a revolutionary development and also that the popular designation of the new aircraft as a "rocket" ship is incorrect. The first patent on a jet-propulsion system was granted as long ago as 1908, and an airplane so propelled is about as closely related to a rocket as Hitler is to Adam.

The rocket shell or glider, differ-

ing in no essential from the familiar Fourth of July sky rocket, is driven through the air by the force of explosives, reacting on the atmosphere behind it. Rockets have been put to many practical uses, such as helping airplanes to take off, and recently most of the belligerent countries have used them to propel explosive shells. The famous "bazooka" fires a rocket shell, as does the Russian "katushka." The Germans are believed to be using rocket gliders. At any rate, they had done a good deal of experimenting before the war, Von Opel's rocket automobile being one example.

Tremendous speeds are possible, theoretically, with rocket propulsion. When the gases of explosion are permitted to escape through a series of what are sometimes called "ejectors" and sometimes "thrust augmenters," and which in either case are simply Venturi tubes, speeds of 2,200 m.p.h. are believed to be obtainable. This tremendous speed is virtually the same as the muzzle velocity of a high-powered rifle bullet. It can be attained by a rocket in the stratosphere as well as at lower altitudes, since no atmosphere is needed in igniting the explosive. The one fault of rocket propulsion is that, at speeds slower than 2,000 ft. a second, little of the power can be utilized.

Jet propulsion, although the power is derived from the pressure
(Continued on page 54)



The Sawyer Buick Co., Milwaukee, Wis., where \$8,300 worth of labor is sold to customers in the service shop every month.

A DEALER Shop

Doubles

For the SPECIAL ATTENTION of CAR DEALERS

Discussing a problem of vital importance particularly to dealers, this article is only one of many in this issue of **MOTOR AGE** that make profitable reading for the car dealer and the men in his shop. All the articles in this and every other issue of **MOTOR AGE** offer helpful information on management, service, official regulations, and current developments pertaining to the automotive retail field.

A FEW months ago when Chet Shirk, service manager of Sawyer Buick Co., Milwaukee, Wis., got his paid customer labor up to \$4,500 a month, he and his whole organization thought this was a very good record. The working force at that time included seven mechanics and three helpers and everyone was kept busy.

Key business-getting plan up to that time had been a monthly postcard mailing to a list of 4000 owners. Still, in looking over his set-up, Shirk figured it was possible to do more business. His men were not working much overtime and expressed a willingness to do so.



Chet Sawyer, left, Sawyer service manager, who developed the overtime plan to boost sales.

Its Volume

Overtime night shift gives men time to handle booming demand for service

Shirk then laid out a new merchandising plan calling for intensive floor selling and a gradual increase of the mailing list.

When a customer brought in a car for service, Shirk would suggest a number of seasonal services after the original order had been written down. This kind of selling brought in many additional jobs. Mechanics, too, were quick to spot needed services and call them to the attention of Shirk, who then would get in touch with the car owner by phone and advise him of the need of additional repairs. In most cases the order was "Go ahead." Wherever possible, Saw-

yer Buick saved the old parts to show the motorist what was wrong.

Service volume began to climb until by Sept. 1, 1943, it had reached \$8,300 monthly, with an increase in the mechanics force of only three men. Mechanics, paid an hourly rate and also a 40-60 basis, were allowed to come to the big garage in the evenings if they wished to work on special jobs, tools having been issued for them in the afternoon. For such extra work—over 48 hours a week—they get time and a half. This sent their weekly earnings up quite a bit higher and made them more satisfied. It also helped Sawyer Buick

turn out more work and handle the increasing volume of business.

"The morale in our service organization is very high," says Shirk. "Everybody is proud of the record we have made and is anxious to maintain it. I think we can do it by continuing our advertising policy and stressing floor selling."

"When a man brings his car in for service, no matter how minor the trouble may be, that is the time to sell him other needed services, because he is in the mood to have such work done. If you try to sell him later, you can sometimes do it, but sometimes the mood has vanished. We tell a man that, if we find anything that needs replacing, we will phone him to get an okay. This prepares him to say 'Yes' when we do phone him. We find it good policy to tell this to all customers. Many extra seasonal jobs can be written up, however, at the time the original order is given, and we always try to do this."

Located in the downtown section of Milwaukee, Sawyer Buick uses its windows to advertise its service business. Copy on one window says: "Complete body and fender repair shop. Front-wheel alignment, brake service, major motor repairs, one-hour battery service." Another sign states: "We finance the repairs on your car ourselves. No red tape."

While most repair business is done on a cash basis, the budget sign helps gets business. It is founded on the fact that folks will buy more readily when they know they can use a budget plan if they need credit.

Sawyer Buick has a roomy service department with a wide drive-in on the east and an exit on the south. The streamlined service manager's office and bookkeeping office is located almost at the center, whence shop operations can be directed quickly. The building has a ramp leading to a large gallery on which a part of the mechanical and body department is located. The lube department and most of the other mechanical sections are downstairs.

Monthly specials advertised by Sawyer Buick are posted on a large sign mounted in front of the service office for all customers to see. This placement helps sell many extra jobs. When Shirk talks to customers advocating these specials, he can quickly point to the sign to help clinch the sale.



"Now," Pop said, counting off fingers on his left hand with a screw driver, "there's two ways of turnin' a liquid into a vapor."

In the 27th article of a series designed for the mechanic of limited experience, Pop O'Neill clears up a mystery or two about carburetion

By J. EDWARD FORD

REMEMBER that job I gave you to look over yesterday afternoon?" asked Pop O'Neill, as Tommy Winters was leaving the parts room with a new fan belt.

"You mean that V-eight of Frank Munroe's that was using so much gas?" said Tommy.

"Yes. You decided the trouble was with the carburetor."

"It acted that way to me."

"I ain't blamin' you," said Pop. "That's a natural conclusion. But I put one of the men on this morning and he found some leaky valve guides."

"That shouldn't boost gas consumption—or should it?"

"It certainly should. The air leakin' into the combustion chamber made the mixture leaner. That meant the carburetor had to be set richer to get the right mixture, which was a sheer waste of gas. That's somethin' to keep in mind

whenever you get a gas hog to work on."

"I'll remember it," said Tommy, starting to go and then hesitating.

"Somethin' troublin' you?" asked Pop.

"Not exactly, but I don't seem to have learned much about carburetors. I'd like to find out more about them some time."

"If you want to stick around a few minutes after five o'clock," offered Pop, "we can scare up a few facts for you."

"I'll be here."

At quitting time, Tommy found Pop disassembling a unit at the carburetor bench. Pop laid down the carburetor as Tommy walked up. "Before we get into the actual service of a carburetor," he said, "we'd better have a little talk about the job it is supposed to do."

"It turns the liquid gasoline into vapor, doesn't it?"

"That's all, but that's a pretty big job when you consider the different grades of fuel a carburetor has to handle and the different engine speeds it has to operate at. And it has to do the job almost instantly. An engine that's turnin' over fast can't wait for a carburetor to make up its mind."

"Now," he said, counting off fingers on his left hand with a screw driver, "there's two ways of turnin' a liquid into a vapor. One is to evaporate it and the other is to spray it."

"Let a pan of water stand around for a few days and there won't be none left. That's evaporation, but it's too slow. If you take a garden hose, and turn the nozzle down till it's a pinpoint, you'll get a fine spray that disappears into the air. That's faster but it's still too slow to use for turnin' gasoline into a vapor for an automobile engine."

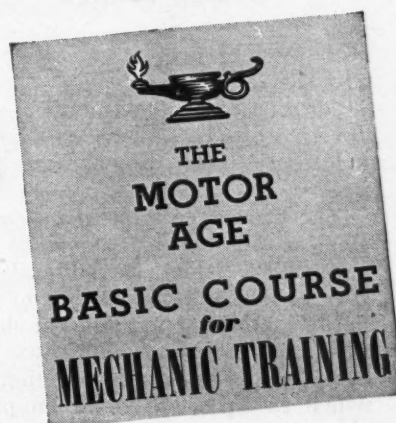
"A jet in a carburetor," said Tommy, "does sort of spray the gasoline, though."

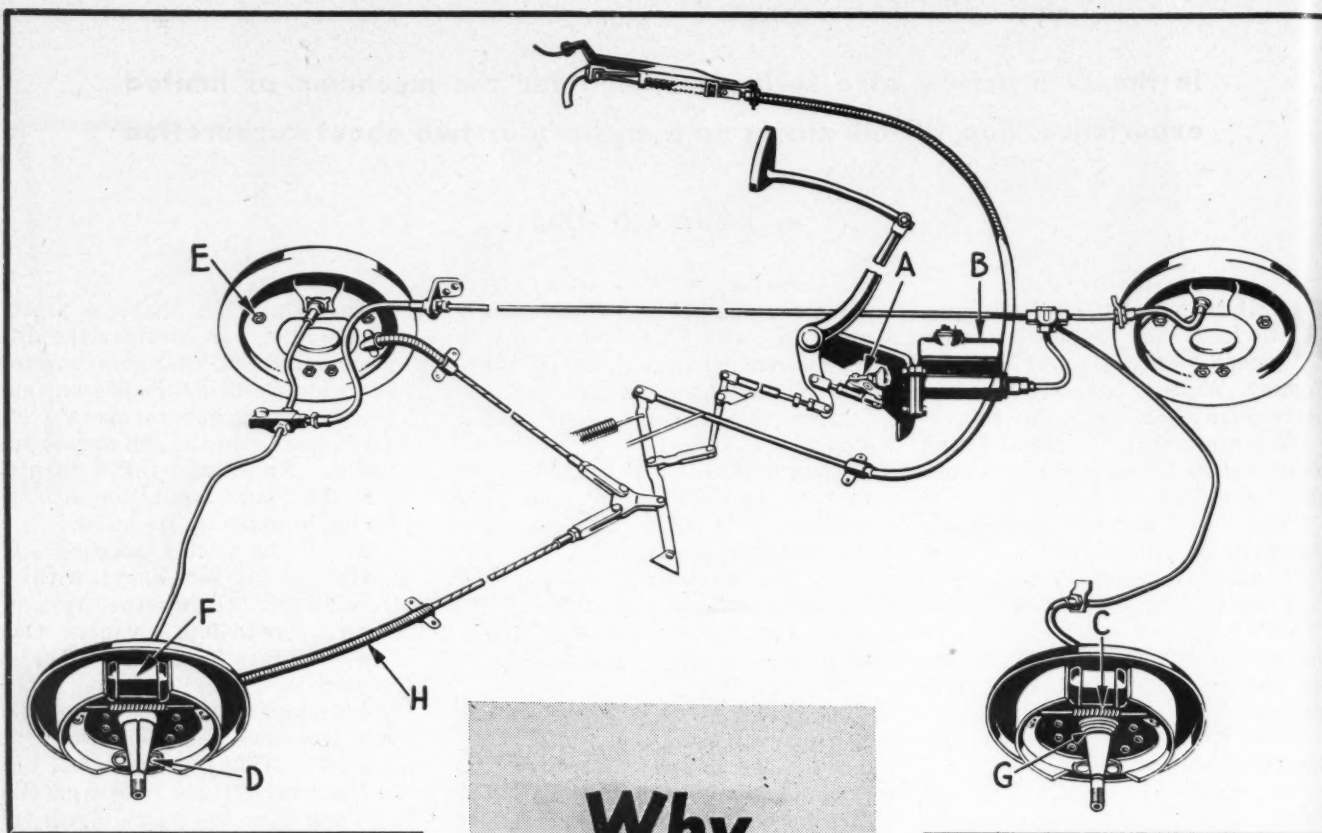
"That's right," admitted Pop. "But it gets help in two ways. The first is heat and the second is the partial vacuum."

(Continued on page 48)

Dope on

CARBURETORS





Why BRAKES Drag

Correct the trouble quickly by
checking the points listed here

By BOB TURNER

WHEN a car comes into the shop with the complaint that the brakes drag on all wheels, the trouble can be tied down to one of two reasons. If the complaint is that one wheel drags, there are six different reasons that could cause this condition.

If the complaint is that all brakes drag, first check for an improperly set brake pedal. (See 'A' in diagram of brake layout above.) Immediately ahead of the master cylinder piston cup, when the pedal is in the normal release position, is a relief port. It is absolutely necessary that this port be open when the brakes are released. The brake pedal should be set so that it has $\frac{1}{2}$ in. of free movement before the pressure stroke begins. Should the port be blocked by the piston cup not returning to its proper release position, the pressure in the system will gradually build up and cause the brakes to drag. Temporary relief from this condition can be made by opening a bleeder screw and allowing the built-up pressure to escape. The bleeder screw must be tightened before the car is driven. Releasing the pressure in this way will prevent damage to the system, but it is consid-

ered an emergency method only, for, if repeated, there will be insufficient fluid to operate the brakes.

The second cause of this condition is the introduction into the hydraulic system of mineral oil, such as engine oil, kerosene, or any fluid containing a mineral base. The mineral-base oil will cause the brake cups to swell and distort, which in turn will build up pres-

sure in the system and cause the brakes to drag.

To correct this condition, it is necessary to remove the wheels and drums, brake shoes and the wheel cylinder pistons and cups. The master cylinder 'B' must also be disassembled and the entire system flushed out with alcohol. After the system has been thoroughly flushed with alcohol, it will be necessary to replace all the piston cups in both the wheel cylinders and the master cylinder.

When the complaint is one wheel dragging, the first of the six reasons for this condition is a weak brake-shoe return spring 'C.' Frequently a brake-shoe return spring becomes weak and takes a set. This allows the shoes to remain in contact with the brake drum, thus causing the brake to drag on that particular wheel. The only remedy for this condition is to replace the return spring.

The second condition that can cause the brake on one wheel to drag is when the brake-shoe bearing is seized to the anchor pin 'D'. To overcome this condition, it will be necessary to remove the wheel and brake drum and the brake shoes.

(Continued on page 56)



The Scheer shop, as it appears to an approaching car owner. Door in background at left leads to the repair shop. The ramp rises to second floor of storage garage. Joseph L. Scheer, the proprietor, is seen at right, with a bit of his complete, up-to-date equipment.



SUPER SERVICE

Is Post-War Insurance

A set-up of proved ability to attract customers is being continued to rebuild peacetime volume

AN automotive repair shop that had to look for customers these war days would be a seven-day wonder. Virtually every shop is turning away more business than it accepts. This seller's market is strictly a war product. Before the war, successful repair shops were the ones that had developed the best methods of attracting customers. And after the war, when buyers again take control of the service market, the search for new customers will be as important as it ever was.

The super-service station can meet both these needs. At least, that is the opinion of Joseph L. Scheer, who operates Scheer's

Super Auto Service at Overbrook, Pa. His present shop grew out of long experience in the repair game and was designed first of all to bring new customers into the shop.

When he moved to his present location three years ago, Scheer had devoted nearly 30 years to automotive service. His shop had always prospered and he had gained a large following of loyal owners. Yet every business inevitably loses customers and these, if the business is to continue to succeed, must be replaced with new ones. Here the independent shop, Scheer found, could not make new contacts by luck or accident; it had to go after

them deliberately and energetically.

On moving to a new location early in 1941, Scheer determined to do something to improve the situation. The property he bought was a storage garage in a high-grade residential location. He built a roomy addition for a repair shop and equipped it for complete repair service. Then, out front, he erected a small but modern filling station, with an island of three gas pumps and a building to house an office and accessory display and a lubrication lift. The front immediately justified the faith he had put in it. The shop was automatically brought to the notice of scores of car owners in the populous area. Many of those who stopped to buy gas or lubrication stayed to buy repair service.

Scheer was too shrewd an operator to run a filling station at a loss, even if it did mean access to new

(Continued on page 58)



Repairing SYNTHETIC RUBBER TIRES

Follow these authoritative tips and casings of wartime material will give



Photographs courtesy of U. S. Army

1. Inspect the tire carcass carefully to determine whether it can be successfully repaired. The tire carcass must be thoroughly dry before attempting any repair. If the carcass is wet, it should be placed in a dry room at a temperature of 100 to 125 degrees for a period of 12 to 24 hours.

2. Break through tire tread on the outside.

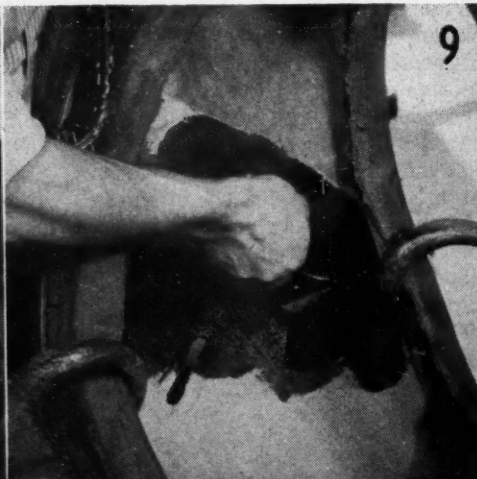
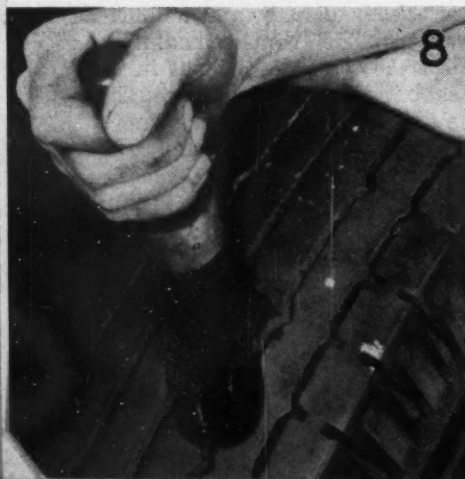
3. Same break on inside of the tire.

4. Prepare the break from the inside of tire by cutting back the fabric around the injury at an angle of 30 degrees to form the carcass skive.

5. Cut out tread around the break and skive the tread on a 60-degree angle. Cut any damaged fabric from the injury so that only sound fabric remains.

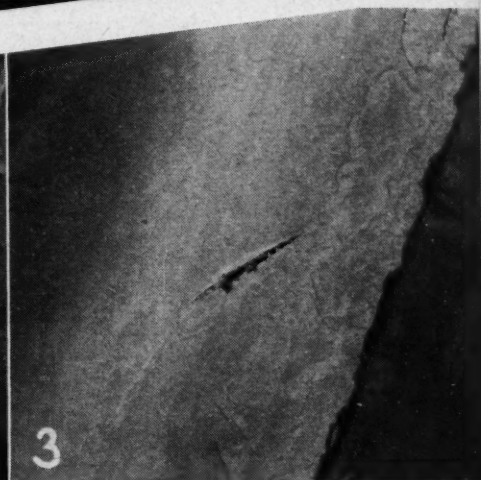
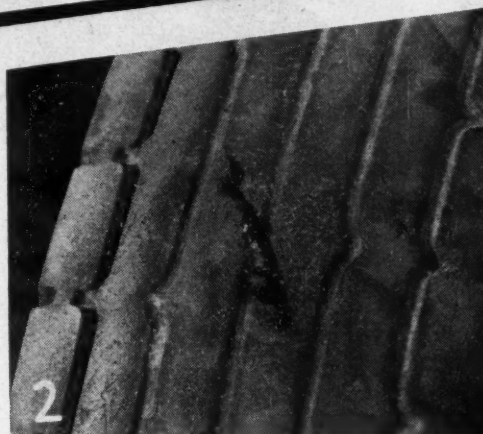
6. Buff the inside of the carcass around the injury with a wire brush, being careful to buff only in the direction of the cords. Buffing across the cords will tear them loose.

7. Buff the bevel surfaces of tread and carcass skives with a sharp-nosed rasp. Buff tread skive very carefully, as synthetic tread will heat and burn rapidly during rasping operation, resulting in poor adhesion between original tread and the new repair.





U. S. Rubber Co.



8. Brush off all buffing dust and foreign matter from area to be cemented. Apply cement to buffed tread skive, using recommended stippling action.

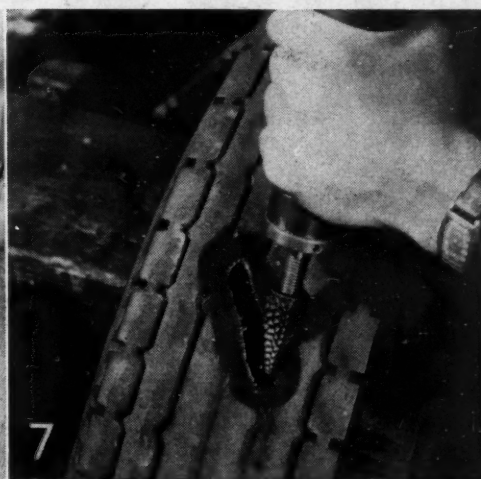
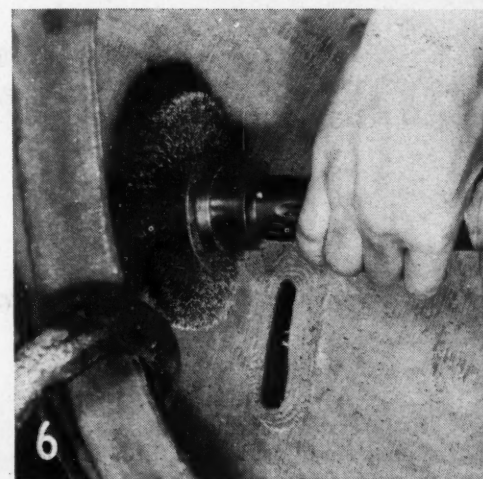
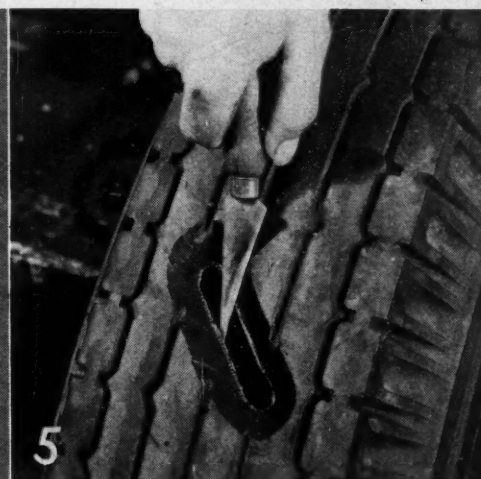
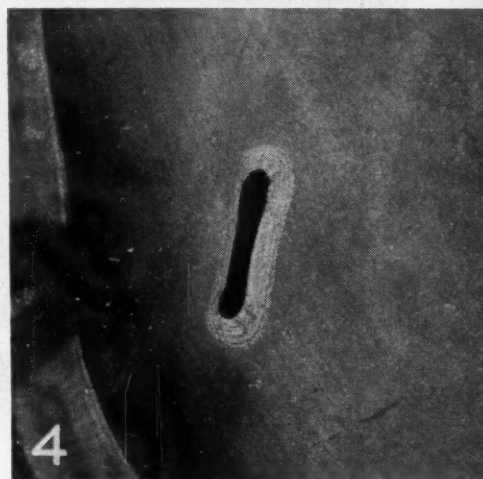
9. Cement the buffed band ply. Place tire in a room at a temperature of 70 to 75 degrees. Allow the cement to dry thoroughly, and apply a second coat.

10. Fill the carcass cavity with padding stock. Apply repair patch over the padding stock. This patch is applied in the regular manner.

11. Cover cemented surface of tread skive with a layer of padding stock. This improves the bond between the new tread plug and the synthetic tread and prevents shearing action between new plug and cured tread.

12. Build up tread plug with tread gum. Tire is then ready for curing.

13. After the tread plug has been cured, remove the tire from the mold without strain or distortion to the casing. Do not spread the tire while it is hot in the area of the repair to remove the section bag. Slide the bag around to another section of the tire that has not been repaired, and then spread. Allow the tire to cool thoroughly before attempting to finish buff or clean up the tread surface.



extra miles of service





Welding angle-iron reinforcement to under side of frame. At right, a truck before and after wheelbase was shortened to haul sand.



TRUCK

Conversions Keep Shop Busy

Lucrative source of business found by Florida serviceman in adapting vehicles

THERE never has been a time when a repair shop's welding and machine-shop equipment could be made to pay bigger cash dividends than right now. That, at least, has been the experience of the East Coast Equipment Co., Miami, Fla.

This firm sells International trucks, tractors and farm implements in a territory which includes several south Florida counties. The company also does a general repair business, servicing commercial vehicles and passenger cars. Accurately gaging the trend toward an increased demand for automo-

tive service, East Coast began about three years ago to expand its shop facilities.

The firm's service department at its main location now occupies a shop, 80 by 80 ft., plus a 25-by-60-ft. parts room. At a second location the company operates a paint-and-body shop covering approximately 1800 sq. ft.

While East Coast was readying itself for a bigger and better servicing business, ground was being broken in various parts of Florida for "military installations," which required building materials. Truck owners were overloading their ve-

hicles. A few cracked and broken frames gave Peter Rowe, East Coast service manager, an idea.

Systematically, as he could spare the time from supervisory duties, Rowe called on owners—transport concerns, contract haulers, private operators.

"Let us reinforce your truck frames and springs to carry the extra weight," he told them. "The conversion can't fail to save you time and money."

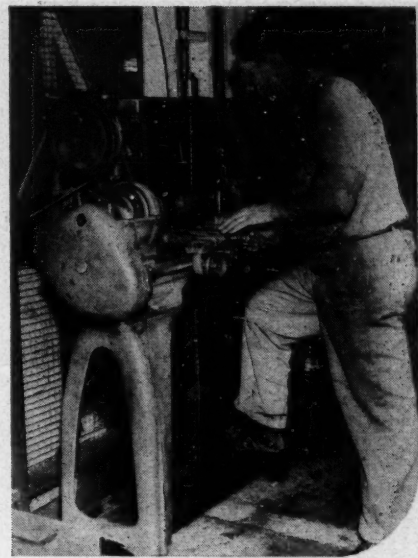
And so reinforcement jobs began to come in. Slowly at first, and then more rapidly, as the idea caught on. After war began, Rowe's prospect



Lengthened drive shaft being welded in a special homemade jig, a necessary operation when the wheelbase of a truck is lengthened.



Riveting a fishplate reinforcement to a frame. When such a plate is used, it is first welded to give frame greater strength.



After a drive-shaft has been welded, it is turned down on a lathe, not only to remove excess metal but also to restore balance.

By
Harrie H. Bierman

for heavy wartime duty

list lengthened. Demands for highway transportation zoomed. Out of this situation—and by keeping owners conversion-conscious—Rowe has gradually built up volume on truck and tractor change-overs to the point where they now average one per week. Moreover, he has developed a frame-reinforcing method which saves expense for the owner and conserves critical material.

About three years ago, Rowe began to experiment with angle iron as a substitute for flat stock in frame-reinforcing. Tried out on a company-owned truck, angle-iron

supports proved more resistant to directional and torsional strains than did "fish plates."

Having satisfied himself in this respect, Rowe switched to the use of angle iron as a regular reinforcement routine. Not only does this type of support seem to provide greater frame rigidity, but its application also requires the removal and replacement of less chassis construction.

Using $\frac{3}{8}$ -in. or $\frac{7}{16}$ -in. iron the same width as the frame, usually 3 in. to 4 in. (3 by 3 to 4 by 4 in.) and long enough to extend from the running-board front-bracket to within 8 in. of the rear spring's forward end, Rowe arc-welds a length to the underside of the frame on each side of the chassis.

A current advantage in the use of angle iron for this purpose is that, locally, it is more easily obtainable than flat stock. Rowe's present supply came from the supporting structure of a dismantled water tower.

On one reinforcement job, recently completed, the carrying capacity of a wholesale grocer's two-tonner was increased to accommodate a load of eight tons. In another instance, a contractor's $1\frac{1}{2}$ -ton chassis, mounting a stake

body, was converted for use with a steel dump body to carry six tons.

Of course, rear springs must be reinforced, too. Depending on the amount of extra weight to be carried, the number of leaves added vary from two to four in the main spring and one to two in the overload spring. On the grocer's truck, for example, two leaves were added to the main spring and one to the "helper."

Two other types of chassis conversions in which the shop specializes are frame-lengthening and shortening. For instance, the owner of a dump truck, having a 134-in. wheelbase, wanted to mount a 10-ft. stake body. The change required a 25-in. frame extension.

Naturally, details of such a conversion vary with chassis construction. However, the procedure followed on the job above mentioned serves in a general way to outline East Coast's frame-lengthening methods.

The side members were cut with an acetylene torch 4 in. behind the cab. A 25-in. length of channel iron of the same width and depth as the frame was set in on each side, and electric-welded into place. The cross member housed a self-

(Continued on page 88)



DID YOU Know It?

WHO?

WHAT?

WHEN?

WHERE?

WHY?

... and HOW?

Yank Buster



When the first jeep out of the initial order of 70 began to arrive at the Holabird Proving Ground near Baltimore, from American Bantam Car Co., officers of the Motor Transport Corps directed that they be put through rigorous experimental tests. However, the rugged little $\frac{1}{4}$ -ton reconnaissance vehicles withstood all this punishment without anything giving way. Finally, the commanding officer singled out one of the test drivers and directed him: "Take out this car and bust it within the next three hours."

The driver took the jeep and sent it over the most grueling sections of the Holabird test course. It traversed mudholes, corduroy road, Belgian-block pavement, hummocks, and hill and dale. But still the sturdy jeep held together. The three-hour time limit was nearly up.

In desperation, the test driver sought out a near-by shipping platform. He drove the jeep onto the platform and then hurtled it into space from the end of the elevation. Despite the 3-ft. drop, the vehicle landed on its four wheels and went bouncing merrily along. The driver stopped and examined the jeep thoroughly but could find nothing broken or out of line. Twice more he drove the jeep onto the shipping platform and

jumped it off into space. Each time he was subjected to a back-breaking jar as the jeep came into contact with *terra firma* again. But everything on the jeep held together.

At last he drove the vehicle back to the commanding officer and reported sadly: "You had better get someone else to bust this vehicle, sir, before it busts me!"—Ed Warner.

30-Year Model



Some time ago, newspapers reported the fact that C. H. Vandervoort, who was vice-president of the old Moline Automobile Co., had received a complaint from a California woman that her Moline, purchased in 1913, was having carburetor trouble. She had not heard that the car was orphaned in 1922, and really hadn't much to

to complain about, yet her query recalled an interesting car.

The 1913 Moline was dubbed the "Dreadnought" and, with its 4 by 6 in. engine, was advertised as the car having the "longest stroke motor used in any American car." The carburetor, of which the California owner complains at this late date, was located 5 in.

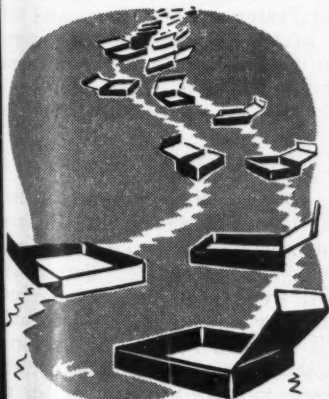
LET US SEND YOU \$10.00

Motor Age will pay \$10.00 each for acceptable short items or articles which are published in this department. They should be brief, preferably with a real humorous touch and, above all, should be of wide interest to those in the trade. They can be anecdotes regarding well-known men in the automotive industry, interesting bits about little known facts relating to the industry or its products, stories about unusual stunts or experiences with automobiles from the earliest day to the present. The general character of the material desired may be judged best by referring to the items on these pages and in this department in previous issues. The facts should be simply but plainly stated without any attempt, necessarily, to put them in publishable form. The Editors will see to that.

Send your contribution—every reader of Motor Age is invited to do so—to "Did You Know It", Motor Age, Chestnut and 56th Sts., Philadelphia 39, Pa.

higher than on previous models, thus eliminating recondensation in the suction pipe, a condition that had been troublesome when the pipe was longer. Before this change could be effected, two gas tanks had to be provided, a main tank in the dash, and an auxiliary under the seat. Fuel was pumped from the auxiliary to the main tank as needed. The change was described at the time as a "most radical departure."

Oh, for War Tires!



Anytime an owner starts to deplore the fact that synthetic rubber is not so good as the natural product, here is a story to tell him:

Back in 1911, an endurance run was made from the Twin Cities of Minneapolis and St. Paul, Minn., to Helena, Mont., a distance of some 1300 miles. It was a notable run for the times,

with 22 cars entered by such prominent automobile enthusiasts as John Ringling, of circus fame, and Louis Hill, president of the Great Northern Railway. The route followed the track of the railway so that a train of sleepers and a dining car could be on hand each night to provide food and lodging on the prairie. The unusual tour was guided by a pilot car, which

strewed a trail of confetti for the contestants to follow, but on the Twin Cities-Helena run a quipster remarked, "We don't need confetti; we just follow the discarded tire tube boxes." He was not exaggerating greatly. On the tour, the 22 cars replaced 200 tubes and 90 casings. One car, an Abbott-Detroit, had 14 blowouts in one day. The average cost for tires and tubes was \$256 a car.

How those contestants would have appreciated a good, sound synthetic tire, with a wartime retread of reclaimed rubber!—L. H. Simons.

Safety in a Bottle



Among the discoveries that have resulted from accidents, none is more remarkable than the revelation of the idea of safety glass.

It happened in Paris in 1903. Edouard Benedictus was straightening up his laboratory when a bottle slipped from his hands. To his surprise, it did not shatter when it struck the floor. He found when

he picked it up that the glass had cracked in many places but the fragments clung together. Then he recalled that he had put a nitrocellulose solution in the bottle 15 years before. The solution had evaporated, leaving the bottle lined with a coating of cellulose.

Benedictus forgot the matter until sometime later when his attention was drawn to two automobile collisions in which young women passengers had been cut by splintering glass. Pondering the mishap, he thought of the nitrocellulose bottle. He went immediately to his laboratory and, after 2 hours of constant thought and work, and with the aid of an old letter-press, produced the first sheet of non-shatterable glass.

As Benedictus told the story himself later in a magazine article, the idea came to him as an image of the nitrocellulose bottle, which appeared, faintly illuminated and moving, as he sat at dinner. This touch may be, as B. England of the Pittsburgh Plate Glass Co. points out, only Gallic fancy, but the benefits of the discovery have been genuine.—J. E. Ford.

Who Is This Man?

He was born at Ipswich, Mass., in 1878 and was graduated from Harvard University in 1901.

In 1915, while he was general sales manager of the National Cash Register Co., two friends invited him to join them in building electric-light plants for farms. He later became president of the new firm.

Next he was made vice-president and general manager of a big passenger-car company. After war was declared, he was assigned to Washington.

Last month, he retired as vice-president of the company but remains as a member of the board of directors.

If his identity still escapes you, turn to page 70.

NEW PROFIT MAKERS

PARTS TOOLS EQUIPMENT ACCESSORIES

Brake-Cylinder Chart

L. J. Miley Co., Inc., announces completion of the new Miley No. 4 Brake Cylinder Chart with comprehensive information on brake assemblies and it is now ready for distribution.

Arranged in handy four-leaf calendar form, with metal wall hanger and indexed for quick reference, the eight pages of this attractive chart provide complete listing of master and wheel cylinders and casting numbers, with 40 graphic illustrations. Listings are both alphabetical for car names and models, and numerical for master cylinder and wheel-cylinder assemblies. The large diagrams, showing every possible interchange, will be apprecia-



ted by brake repair men everywhere, particularly at this time when so many shops are working with inexperienced help. Requests and inquiries concerning this chart will be welcomed.

Fog Lamps

Under amended Limitation Order L-158, fog lamps, spot lights, and back-up lights have been released for vital transportation. The new Arrow Fog Lamps are available for this purpose. They have the all-glass, sealed-beam lighting units that will not deteriorate, even after long periods of service. The lamps themselves have an all-weather, gray or black-enamel finish. Their construction is sturdy and they can be easily and securely mounted. Like all Arrow products, they are built to give years of trouble-free service.

Underbody Coating

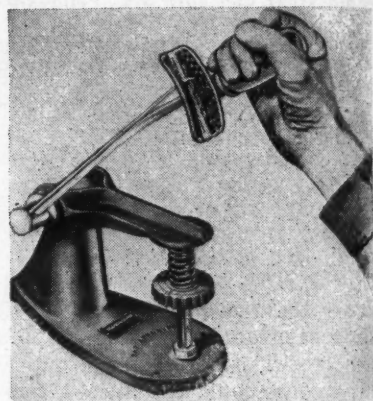
Applied with spray equipment to the entire underbody of automotive vehicles, fenders, and under the hood, 3-M Underbody Protective Coating serves the triple purpose of a blanket protection against rust and corrosion of vital chassis and underbody parts, eliminates rattles and noises of loose connections, and acts as an insulator against extreme heat and extreme

cold. It can be applied by any serviceman conversant with standard types of spray guns, and, the manufacturer says, will last for the life of the vehicle without renewing.

An example of the importance of this new type of sprayed on blanket coating is its present use in vehicles and planes for the Allied armies. In Russia, particularly notorious for weather extremes and poor highways, this type of insulation treatment is a standard requirement. Manufactured by Minnesota Mining and Manufacturing Co., St. Paul 6, Minn.

Spring Tester

With the ingenious Spring Tester and Torque Wrench made by the New Britain Machine Co., is now possible to measure or test the recoil pressure of springs compressed to any



predetermined length. The Spring Tester takes coil springs up to 7 in. in length and 2½ in. in diameter. With the tester it is possible, quickly and precisely, to match sets of valve springs, clutch springs, etc., not only in size and shape, but in recoil pressure at all critical operational points.

This new device tells its precise story on a single scale—the scale of the New Britain Torque Wrench. The Spring Tester is low in price and built for a lifetime of service. A priority rating of AA-5 or higher is required for the purchase of these tools.

Car Shampoo

It is claimed by the makers of Hurricane Auto Shampoo that this new car-wash method cuts labor and water costs and produces better and brighter wash jobs. It preserves and protects car finishes and colors, and, since it contains no soap, soda, borax or abrasive compounds, it is entirely harmless to paint, wax polish or

Hurricane Auto Shampoo is packaged to fit every requirement—for the customer who washes his own car, for the filling station that does an occasional wash job, for the production wash rack that washes dozens of cars every day. Further details may be obtained by writing to Lakeside Products, Chicago, Ill.

Laughs OF THE MONTH



"Well, it looks like I've gone as far as I can on an 'A' card!"



"I've got great news, our talent scout has located a man for the wash rack."

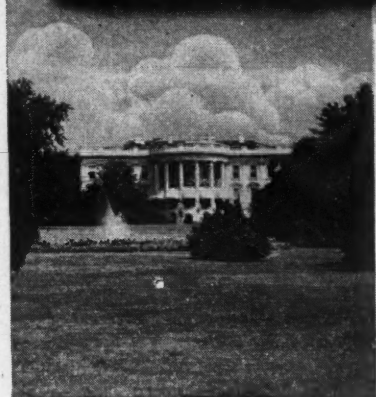


"Ah-ah—Mustn't hit below the belt!"



"The boss just told me I could be the best mechanic in the city if I wasn't so damn dumb!"

WASHINGTON RULINGS AND REGULATIONS



Battery Quotas Boosted To 110 Per Cent for 1944

QUOTAS for automotive battery manufacturers have been boosted to 19,800,000 units for 1944, the WPB has announced. This represents approximately 110 per cent of the bat-

teries sold in 1941, the year upon which production quotas are based, compared with last year's quota of 105 per cent.

Producers who sold fewer than 25,000 replacement batteries in 1943 may build units without regard to the 110 per cent quota, so long as their total

does not exceed 25,000 units. In Group I labor areas, the limit on every battery producer for 1944 is 100 per cent of batteries made by him in that area and sold in 1941 or 1943, whichever is higher. Producers not in Groups I or II may apply to the WPB for permission to exceed the 110 per cent quota.

A further amendment to Limitation Order L-180, governing battery production, removes the 90-day limitation on distributors' inventories.

Ban on Chromium, Nickel In Valves Is Revoked

WITH the revocation of Limitation Order L-128, all restrictions on the use of chromium and nickel in automotive valves have been removed by the WPB. The order, effective July 1, 1942, and amended Dec. 18, 1943, did not permit manufacturers to produce an intake valve from any material other than NE or alloy steel, containing a fraction of a per cent of chromium and nickel, except by specific WPB authorization.

The limit on chromium in exhaust valves varied from 9 per cent, in passenger cars and light trucks, to 20 per cent for medium and heavy trucks. On nickel, the limit varied from none in passenger cars to 9 per cent in heavy trucks. An exception was made in case the melting charge contained not less than 90 per cent of aircraft-valve scrap, in which case a maximum of 15 per cent of chromium was allowed, 15 per cent of nickel, and 3 per cent tungsten.



ROUGH ON NAZIS. New assault weapon being built by the Cadillac Motor Division. Known as the M-8, it is powered by two V-8 engines. The guns it mounts are secrets.

DRUMS OF WAR. Filled with gasoline and oil, they are being floated and rolled ashore at Apamama Atoll in the Gilberts to power U. S. warplanes in attacks on Jap islands.



Before the war, 19 per cent of chromium and 5 per cent of nickel was common in passenger-car valves.

Two reasons are given for the revocation of the limitation order, one that valves of plain steel did not stand up in service, the other that the difficulty of separating military and civilian valves in production was too great.

Farm Tractor Output Reached 123,000 in 1943

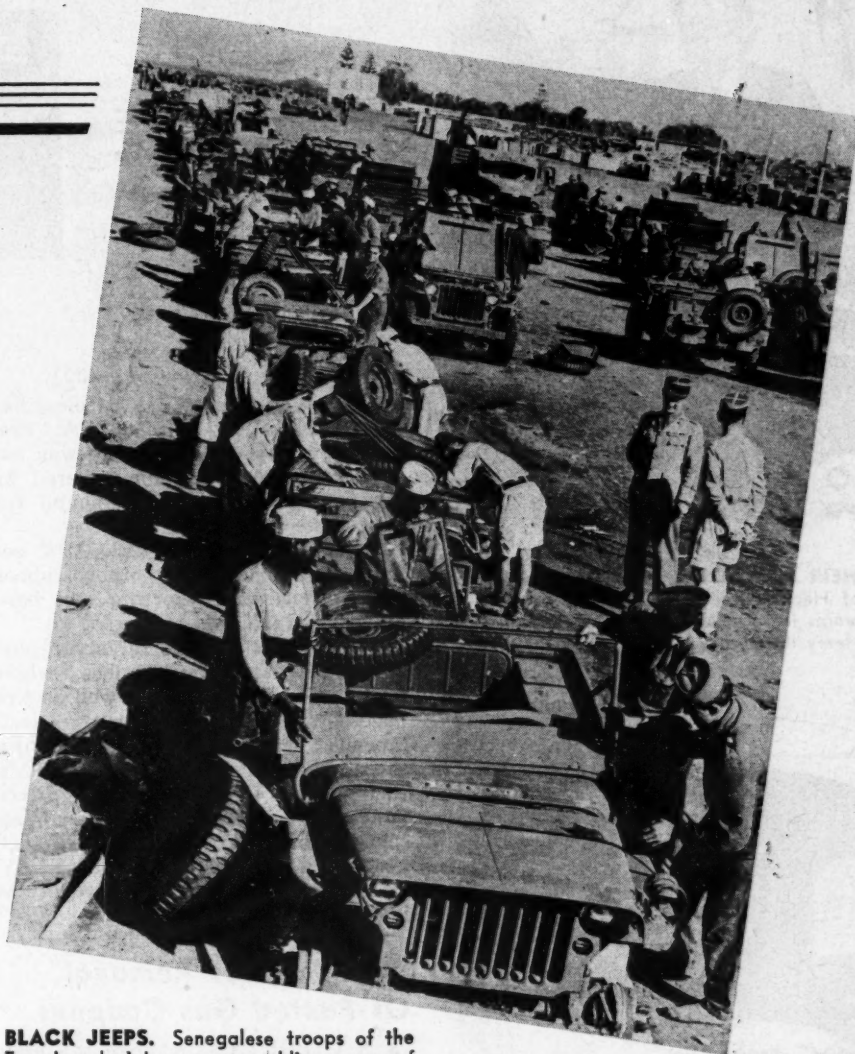
PRODUCTION of wheeled tractors, principally for farm use, was larger in December than for any month in the last two years, with more than 20,000 units being built. In the same month of 1942, only 4200 were produced.

Altogether, 122,000 wheeled tractors were built during 1943, with 56,000 being produced in the second quarter. Quotas for the first six months of this year total 120,000, a goal that can be reached, according to Donald M. Nelson, WPB chairman, only if the demand for landing craft does not rise sharply, a possibility in the event of a European invasion.

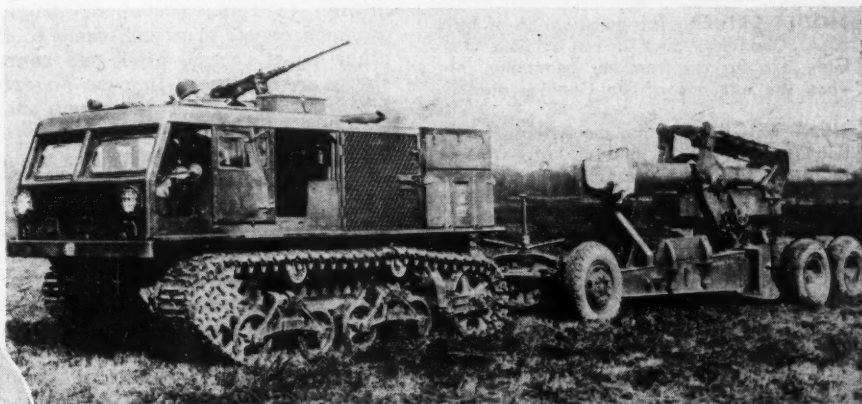
The use of copper in farm-tractor radiator fins and power take-off gears, formerly forbidden, is now permitted under an amendment to Order L-170-a.

Ceiling Raised on Scrap

A PRICE ceiling of 8 cents a pound for pneumatic-tire carcass fabric, when prepared for use in the manufacture of tire patches and reliners (Continued on page 40)



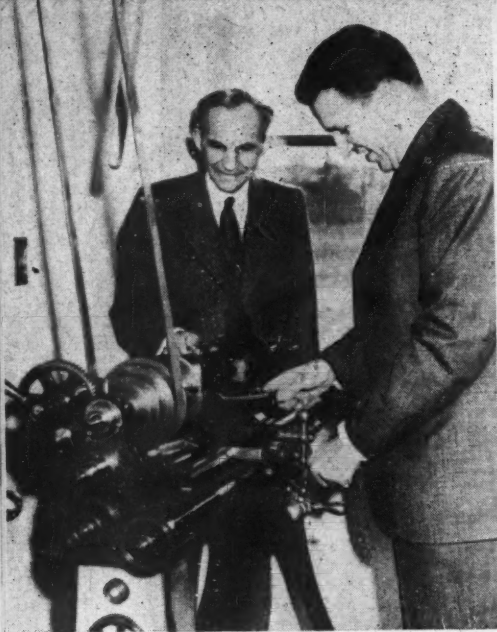
BLACK JEEPS. Senegalese troops of the French colonial army assembling some of the mighty midgets shipped knocked-down from U. S. photo was taken at Casablanca.



SPEED TRACTOR. Designated as the M-4 prime mover, this new artillery tractor, developed by Allis-Chalmers, tows big guns at high speed and carries the shells for them.



AWARD WINNER. Clem J. Burkley with the ice-gripping plane tire that won him a citation by the WPB. Metal springs embedded in tire tread help prevent skidding.

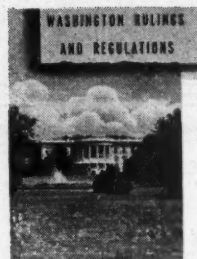


HEIR APPARENT. Under the watchful eye of Henry Ford, 26-year-old Henry Ford II learns to run lathe once used by his father. Henry II may head the vast Ford enterprise.



MODEL DRIVER. The duration job of Miss E. A. Chandler, truck driver at Fort Ord, Cal., is a far cry from her peacetime job, when she was one of the Conover models.

NEAT TRICK. We also mean that of getting in and out of midget car. Dolores Moran, a film player, uses the tiny vehicle, says her press agent, to get to her studio.



(Continued from page 39)

or as a material for shoe soles, has been established by the OPA. Previously, scrap of this nature was not specifically priced, being covered by the ceiling of $\frac{3}{4}$ cents a pound for miscellaneous scrap.

At the same time, the OPA set maximum prices for other rubber scrap where extra sorting and handling are involved.

These include prices for scrap passenger-car and truck tubes, whole pneumatic tire casings, as well as tire "peelings" and a long list of miscellaneous rubber products, including those made of synthetic rubber. In the case of tire casings, the prices vary with seven specified consuming centers and, in the case of "peelings," there is a differential established between Los Angeles and other consuming centers.

OPA Forbids Removal Of Pasted Gas Coupons

AN IMPORTANT change has been made by the OPA in rationing rules affecting the handling of coupons by filling stations.

It is now a violation of rules for anyone to remove coupons from a gummed sheet, to attach them to another sheet, or to alter the coupon sheets in any way. In case an error is made in pasting a coupon on a sheet, the station may apply to the local board for coupons to replace those erroneously attached to the sheet.

The OPA has ruled further that, when a driver has had his gasoline rations revoked, he also may be prohibited from using the gasoline in his possession at the time of the revocation.

The ruling on pasting up stamps was made, the OPA explains, to hamper black-market operations, the second rule to enforce revocations of rations.

WPB Makes New Study Of Bearing Demand

IN an effort to schedule the production of anti-friction bearings more closely, the WPB has asked about 150 large users of such bearings to submit their requirements for the period from March to August of this year.

Each applicant's requirements will be studied in relation to his authorized production schedules. Quantities of bearings requested will be modified when they are not considered justified.

Feb. 1 was the last date for filing requests. Early this month the WPB will grant authorizations to allow applicants sufficient time to adjust their shipping releases directed to bearing producers.

Approval by the WPB of requested deliveries will not constitute an allocation of bearings to an applicant but will establish the maximum quantities the applicant is authorized to accept.

OPA Right to Suspend Gasoline Firm Upheld

THE right of the OPA to order a firm to suspend business operation for violating rationing regulations was upheld last month by the Fifth Circuit Court of Appeals at New Orleans.

The decision came in the case of Foy and Amos Wilemon, who, doing business as the Good Luck Oil Co., operated seven gas stations in Dallas, Tex. Accused by the OPA of accepting coupons before they became valid and of accepting unendorsed coupons, the Wilemons were ordered to suspend dealing in gasoline for two weeks. The Wilemons obtained an injunction in federal district court to prevent the OPA from enforcing the suspension order.

On appeal to the appellate court, the decision of the lower court was reversed. The unanimous opinion declared that the suspension was a proper condition of sale of a rationed material under the Second War Powers Act. The only court higher than the Circuit Court of Appeals is the U. S. Supreme Court.

Tire Repair Ceilings

DOLLARS and cents ceilings have been placed over the basic types of tire and tube repair materials by the OPA. Such materials have been removed from the rubber-commodities regulation and brought under the camelback regulation.

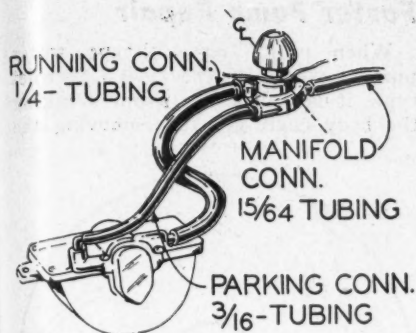
The ceilings apply to sales to recappers, vulcanizers, and retailers. They do not change the general level

(Continued on page 78)

SERVICE HINTS



FROM THE FACTORIES



Wiper Control

The wiper control valve on the 1942 Buick is located on the instrument panel instead of on the wiper motor as in former years.

The control has three outlets for the attachment of the vacuum lines. One line leads to the manifold connection and the other two to the wiper motor. The operation of the mechanism is similar to that on earlier models. The control knob is simply snapped onto the shaft of the control and may be removed by prying slightly to release it.

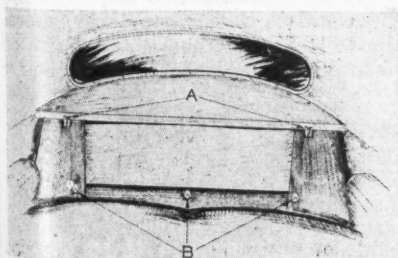
The valve proper is held to the instrument panel with a spanner nut and washers, located directly under the knob, necessitating a spanner wrench for its removal.

All bushings in the operating link are rubber-mounted.

Noise Behind Rear Seat

A crunching noise in the back of the rear seat on a Pontiac Metropolitan sedan may be caused by the chafing of the retainer clips by the bottom border wire of the seat-back spring. This can be corrected by wrapping friction tape around the clips.

To do this, the seat-back assembly must be removed by releasing the top of the cardboard trim pad of trunk far enough to reach the three metal retainer clips, which hold the seat-back springs at the top. Bending these out will release the seat-back assembly, which can be removed by lifting up to disengage from the clips.



Tractor Clutch Shaft

Failure of clutch shafts on the Massey-Harris Co. 101 Jr. tractors is due to a misalignment which causes the shaft to bend and eventually to break.

This misalignment may be caused

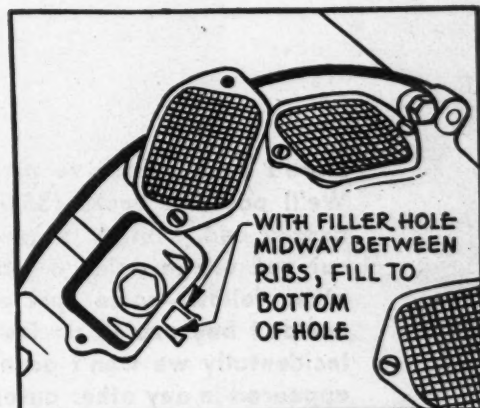
by failure to keep the engine-support bolts tight, particularly the front support bolt, and by not installing the correct number of shims between the engine and the support. In some cases, shims have been lost when the engine support has worked loose.

This difficulty can be corrected by a periodical inspection and by installing a newly designed cap screw, part No. 17371, at the front support. This new cap screw has a drilled head and, after it is tightened, it can be kept secure by a lock wire passed through the drilled head.

Also check alignment of the clutch shaft with the transmission shaft. These shafts are in proper alignment if the sprockets of the chain coupling will slip from one shaft to the other without bending or forcing. They can also be checked by slipping the sprockets close together and checking the clearance between the sprockets at all points of their circumference. If there is more clearance at one point than another, or if the bottom of the teeth are not even, it indicates that the shafts are misaligned and it will be necessary to line up the engine.

The flywheel should also be checked. It should not be more than .004 in. out of round.

In replacing the clutch shaft, it will be necessary to countersink a hole in the new shaft for the set screw in the hub of the sprocket, and the sprocket must be spaced just far enough apart to allow .010 in. end play on the chain around the sprockets. The countershaft hole can be drilled through the set-screw hole in the hub of the sprocket after the sprocket has been properly spaced. Be sure that the set screw is securely tightened and the chain around the sprockets is loose enough in circumference to have a slight shake.



Filling Liquamatic Drive

On 1942 Mercury models a Liquamatic drive was adopted as optional equipment. The liquid in the flywheel is SAE 10W oil in all seasons and localities. It should never be necessary to change oil.

Two marks are provided on the flywheel housing as shown in the illustration. The correct level is at the bottom of the filler hole when the hole is centered between the two flywheel-housing marks.

Engine Knock

A noise similar to a "ping" condition in the engine, or a rattling manifold heat-control valve in 1941 and 1942 Chevrolets, may be produced by the carburetor accelerator-lever rod striking against the exhaust or intake manifold where it passes between these two parts.

Where a noise of this type is experienced on acceleration or deceleration, inspect this rod and check to see that it has sufficient clearance to prevent contact with either manifold in all throttle positions.

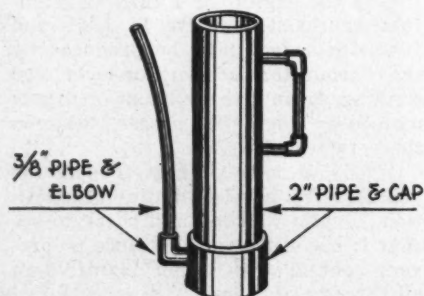


Here's your chance to pick up a little cigaret money. We'll pay five bucks (\$5.00) for every Shop Kink accepted and printed. So send 'em in to us—some short cut you use in doing a job easier and faster than the other fellow—some special tool you made when you couldn't buy one to do the job—and we'll do the rest. Incidentally we won't accept any that have previously appeared in any other automotive publication. Here are some that were accepted this month.

Babbitt-Melting Pot

Oftentimes, we find it is necessary to rebabbitt our own bearings when we cannot get replacements or have the job done.

To make it easy, we have made the babbitt-melting pot shown from pipe



and pipe fittings. This melting pot makes it easy to handle the babbitt and, since it pours from the bottom, very little dross gets into the bearing. —Frank M. Girdwood, P. O. Box 2038, Pittsburgh, Pa.

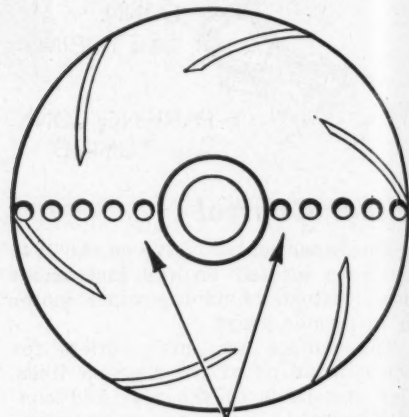
Brake-Cylinder Service

We have had considerable trouble getting hydraulic-brake cylinders when replacement has been necessary, due to pitting of the cylinder.

We have salvaged many of these cylinders by grinding 1/16 to 3/32 in. off the end of the piston push-rod. This allows the piston and cups to operate in a new position in the cylinder and the jobs have stood up very well in service. —Dick Strickland, 1430 Bush St., San Francisco, Cal.

Faster Pump Repair

When rebuilding seal-type water pumps, especially the 1939 Chevrolet type, it is difficult to avoid breaking the body casting when removing the



DRILL HOLES AND SPLIT WITH FINE BLADE CHISEL

impeller from the shaft. Since the repair kits contain new impellers, there is no point in salvaging the old one. I drill a row of holes across the impeller and then split the impeller with a chisel. This allows the old shaft and seals to be removed without damage to the pump casting. —Henry Courcier, 905 Holliday St., Wichita Falls, Tex.

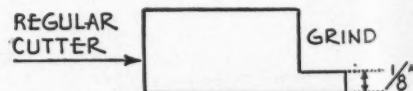
Heat Riser Repair

We have recently had a number of C-35 International trucks come in our shop with burned-out heat risers. We have been unable to purchase any riser tubes for sometime, so we devised the following means to effect a permanent repair:

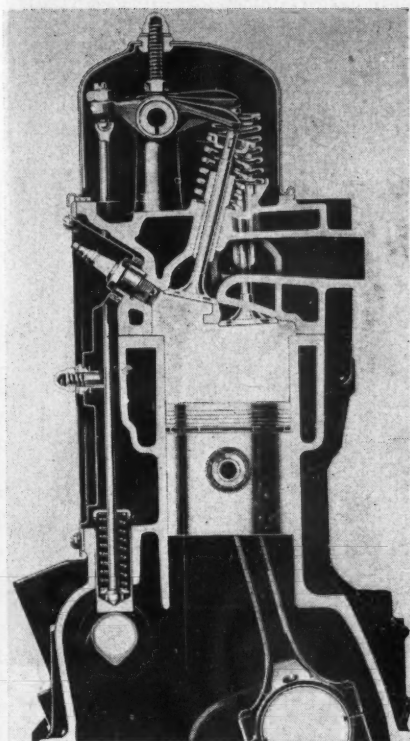
Cut off 1 3/4 in. of a Chevrolet tail pipe, which is 1 1/2 in. in diameter. Do not remove the old riser. Press in the piece of Chevrolet tail pipe and the job is as good as ever. —L. Kisselburg, New Scotland, N. Y.

Installing Sleeves

When installing new cast-iron cylinder sleeves that are too long, we use the following method to cut them off flush with the block: We reverse the



blade of our ridge reamer and grind the edge opposite the cutter blade to 1/8 in. thickness to form a cutting-off tool. By inserting the reamer inside the sleeve with the lower edge of the cutter even with the top of the block, the sleeve is quickly and squarely cut off and requires no extra filing. —Blaine Griffith, Griffith's Garage, 710 Nebraska St., Sioux City, Iowa.



THE READERS'

CLEARING HOUSE

of Servicemen's Queries

Elusive Engine Noise

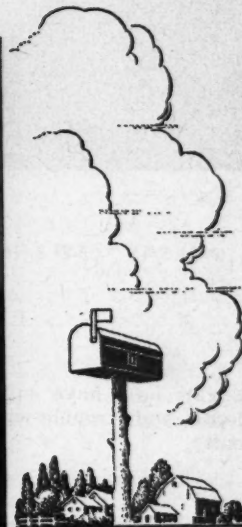
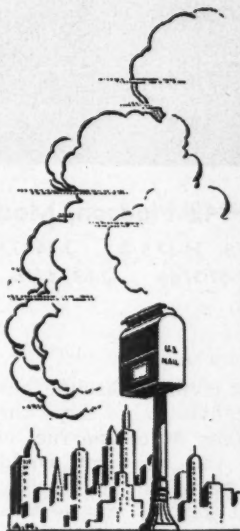
I have a 1935 Master Chevrolet which had a pronounced thump somewhere in the engine.

In the past year, I have replaced three sets of valves, which were burned out completely after about two months of use. With the last set of valves, I also replaced the complete rocker assembly and installed new push rods and guides. The car ran all right for about a month and now the same trouble has occurred again.

I might mention that the car never uses any extra oil, but, regardless of how well it ran, it always did have a miss while idling. Listening to this skip at the end of the exhaust pipe, one could hear a definite compression blow-by.

The valves are set at proper specification clearances. With all this, every once in awhile the thump will disappear for a short period, and the car will perform 100%.—Aaron Schneiderman, Uneeda Service Station, 31 Franklin St., Brooklyn, N. Y.

FROM the description you have given of the trouble you are experiencing with the 1935 Chevrolet, I am inclined to believe you are having difficulty with sticking valves. This might be caused by incorrect installation of the valve guides. The exhaust valve guides should be installed with its open end toward the cylinder head. The intake-valve spring seat should be assembled to the guide with its open end up. Furthermore, on this engine, the exhaust guide is shorter than the intake guide. It is also important that the valves do not become mixed, as the diameter of the intake



Bill Toboldt, Editor, Motor Age

and exhaust valve stems is different.

In replacing valve guides, the valve-guide collar is assembled to the valve guide with the open face toward the cylinder head on the exhaust valve and the intake valve spring is assembled to the guide with the open end up. The valve guides are then pressed into position in the cylinder head.

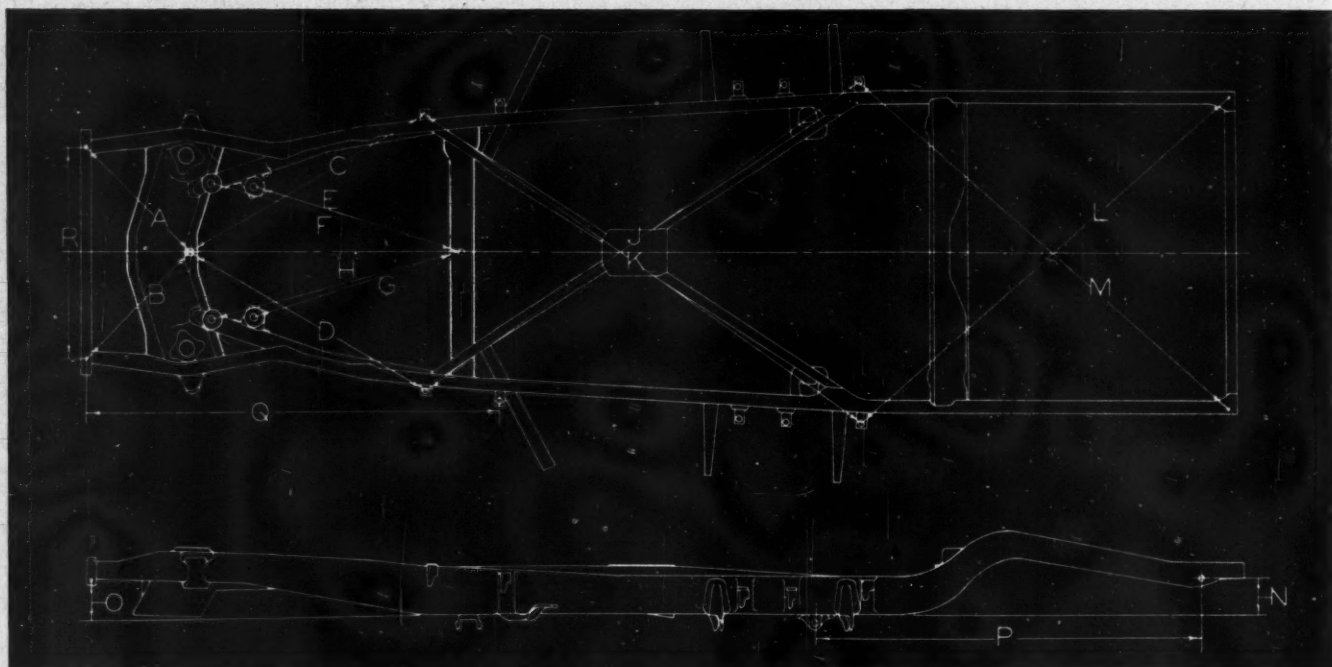
I would also suggest that you make a careful check of the push-rod springs, for, if one of these is broken, you will get a noise such as you describe. Also be sure that the push rods are seated in the bottom of the valve lifters and the spring retainer securely bolted in position. I would suggest that you check the rocker arms and shafts. There are three different rocker arms used in this engine—one type for the exhaust valves and two different types for the intake valves. The intake rocker-arm valves have right and lefthand angles. The righthand angle intake rocker arms

are assembled to cylinders 1, 3, and 5, while the lefthand arms are assembled to cylinders 2, 4, and 6.

After you have checked your entire valve system I would suggest that you use a light engine oil, SAE 10, and also some special valve oil to make sure that none of the valves are sticking.

One other suggestion, and that is in regard to the rocker-arm shafts. One end of the rocker-arms shaft is plugged and the shafts must be installed to the cylinder heads with the open end to the center. After they are installed in their proper place, they should be held in position with a special bolt and special washer. The special bolt allows the rocker-arm shaft and assembly to be bolted in one place, and the special washer prevents oil from leaking out around the bolt. Also check to make sure that lubrication is reaching the assembly.

I am sure if you will check the



Frame Diagram, 1942 Hudson, Model 27

A-21 3/16 B-21 3/16 C-39 25/32 D-39 25/32 F-37 5/8 H-37 5/8 J-84 17/32 K-84 17/32 L-74 41/64 M-74 41/64
N-4 61/64 O-5 51/64 P-57 5/64 Q-59 15/16 R-30 1/2

engine as I have suggested you will locate your trouble without much difficulty.

Boosting Power

I have a 1936 Series 40 Buick which has been driven about 111,000 miles. Outside of having new rings, this motor has never been overhauled. Still has the original pistons. I am considering reboring this motor and installing new pistons and would like to know if it is possible to use the step-head pistons used in 1938-40 Buick, as I desire more power through higher compression. If this isn't possible, could I use 1937 model Buick pistons? I believe they have a wider oil control ring.

Would it be advisable to plug the squirt holes on connecting rods, as I am not turning down the shaft? Would this give the cylinder walls enough lubrication?—Arden Leonard, Washington, Kansas.

AFTER checking the pistons used in the 1936 series 40 Buick with those used in the 1938 series, I find that they are not interchangeable. The reason for this is that the 1938 cylinder heads are recessed to take the domed pistons when they are at the top of the stroke. Therefore, to increase the compression on your 1936 model, it will be necessary to plane the cylinder head. I do not think it is advisable to remove more than 3/32 in. of metal from the cylinder head at this time, because the

octane rating of civilian gasoline has decreased about five points since the war started. When 80 octane fuel is available after the war you could remove 1/8 in. of metal or possibly 5/32 in. without getting into serious trouble from detonation or the possibility of breaking through the cylinder head into the water jacket.

Don't forget, just reboring the engine will increase your compression because of the larger bore while the combustion chamber space retains the same dimensions it had before.

In regard to plugging the oil squirt holes in the connecting rods, this is only advisable if the crankshaft is worn .003 in. or more out of round. Under such conditions the cylinder walls will receive ample lubrication from oil thrown off from the sides of the rod bearings. Naturally, if the crank shaft is not worn, it is advisable to retain the oil squirt holes in the rod bearings.

Planing Tractor Head

I would like to know how much can be planed off the cylinder head of a Farmall tractor, Model F-12, Serial No. 50788 without weakening the head? Are any other alterations necessary?—John Carpenter, East Liberty Garage, East Liberty, Ohio.

ON your Farmall tractor, I do not think it is advisable to remove more than 3/32 to 1/2 in. of metal from the cylinder head. This will raise your compression about all that is possible with present-day fuels. If

you remove more than that, you will get into trouble from severe pinging.

I would suggest that you remove 3/32 in. and retain the same pistons you are now using. After raising the compression, it might also be necessary to retard the spark slightly and also use a cooler-type spark plug. However, I would first try the plug you are using at present, as it might be satisfactory.

Pings Begin at 50

We have a 1937 Plymouth that develops a ping at 50 m.p.h., but performs fine up to that point. The distributor has been checked, and timed with a timing light. The customer uses premium-grade gasoline. We have a 1940 Buick Special which performs in the same manner.

Some of our Chevrolets, when accelerating a little fast, pop back through the carburetor.

Please give us the solution to these problems.—A Wisconsin Subscriber.

ON both your 1937 Plymouth and your 1940 Buick, which develop a ping at higher engine speeds, I would suggest that you make a careful check of the distributor automatic advance. I note that you say the distributor was checked, but it is not clear in my mind whether you checked the automatic advance to make sure that it was not advancing too rapidly at higher speeds. In this connection, you should not only check the centrifugal advance in the distributor, but also the vacuum advance.

Another point to check is the distributor cam itself. In many cases you will find that the cam is not true, with the result that some cylinders are out of time. A careful selection of a new cam should overcome this trouble.

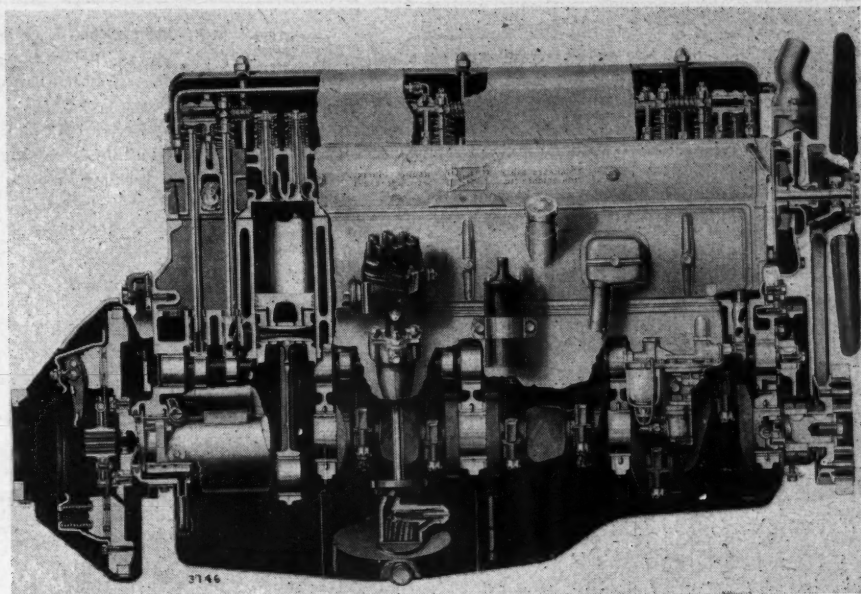
As a further point, the trouble might be caused by a lean mixture resulting from a clogged high-speed jet or a jet that is too small.

On your Chevrolet that is popping back through the carburetor, the trouble is probably caused by the incorrect adjustment of the metering rod. The only way to adjust this is with the metering rod gage which can be obtained from any distributor of the carburetor in question. Another check would be for intake-manifold leaks and for worn intake-valve guides.

Increasing Ratio

I have a customer who wants me to increase the compression ratio of his 1936 Ford V-8 engine. Can you give me full details and specifications for planing off the heads? Should I change the timing, valve lift, etc.?—A California Subscriber.

THE present ratio is 6.3 to 1. This can be increased to 7 to 1 by planing .075 in. off the heads. You will have to watch the clearance of the valves in the combustion chamber to be sure that they do not hit the head in the wide-open position, but it should not be necessary for you to change the valve lift. You should retard the ignition timing to 2 degrees before top center instead of 4 degrees which is the present setting.



Distributor Drive

I have a 1936 Buick which is constantly breaking the distributor-drive connection between the oil pump and the distributor shaft. New parts last between 2,000 to 2,500 miles. The shaft seems to be in line, and turns without binding, and the distributor turns freely. I believe this part is too hard and brittle. Any advice on this subject will be appreciated.—A. Washington Subscriber.

ON that 1936 Buick, which breaks the distributor-drive connection, there is a possibility that the distributor-shaft bushing has become worn, resulting in a misalignment condition, or the distributor drive shaft may be

sprung, or the oil pump housing worn so as to permit misalignment.

Another point that comes to my mind is the condition of the oil. If the oil is excessively heavy or dirty, it would result in an excessive load on the distributor-shaft connecting link, which in turn would cause it to break.

I think the best solution for this would be to install a new distributor-shaft bushing, distributor shaft and new oil pump.

Closed Spring Coils

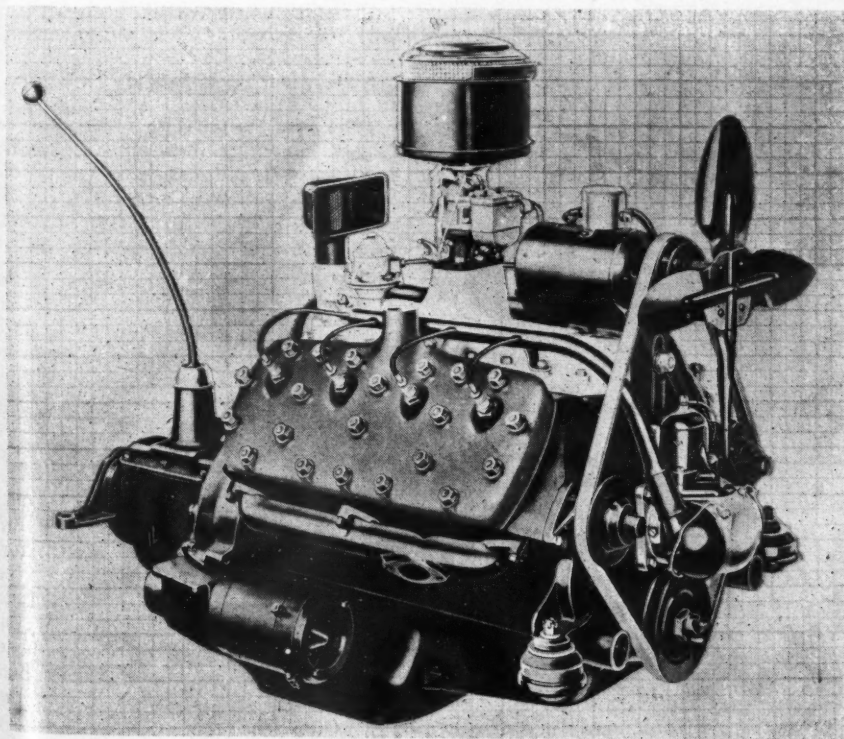
One discussion that has come up and so far has never been settled, is in regard to valve springs. The argument is, why is the closed coil of the spring placed nearest the heat? In other words, on the GMC the closed coil of the spring goes next to the head. One reason I often hear is that part of the spring gets the most heat and tends to weaken at that point. I don't see how that will happen with a water-cooled engine.

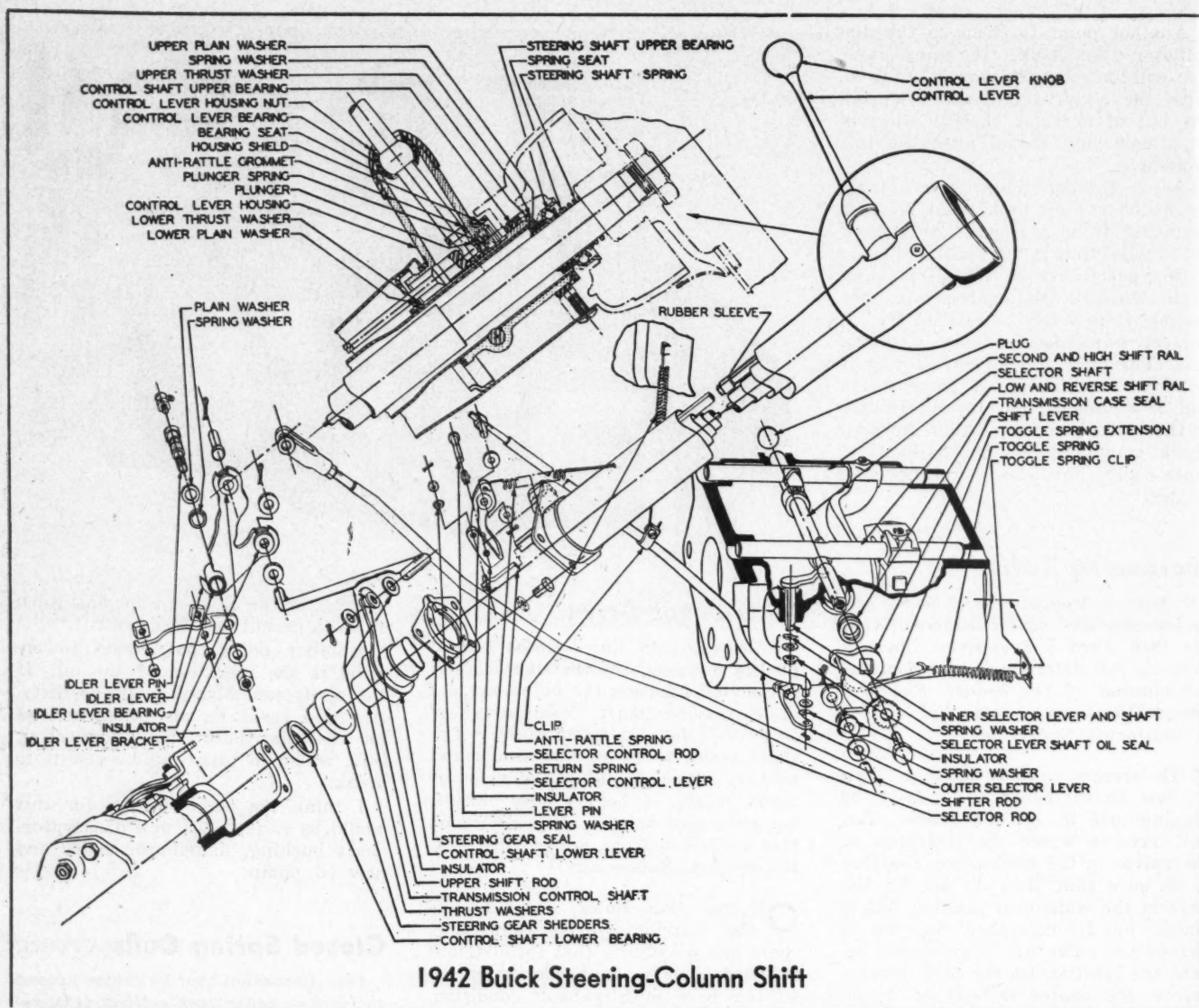
My version is, placing the close coil nearest the head prevents the spring from bouncing and also to prevent distortion.—Michael V. Harrington, 304 Wytke St., Petersburg, Va.

TO the best of my knowledge, valve springs are not designed with closed coils at one end so as to withstand better the heat of the engine. The reason for winding valve springs with closed coils at one end is to change the natural period of vibration.

Breakage of valve springs is often caused by surging (vibration), a phenomenon which may be visualized as follows:

If we compress slowly a spring whose coils are uniformly spaced, by pressure applied to its ends, all adjacent coils will approach each other equally, because all are subjected to exactly the same pressure and all have





1942 Buick Steering-Column Shift

the same resistance to compression. On the other hand, if the spring is dealt a sudden blow at one end, as by a cam rotating at high speed, then an additional force comes into play—the inertia of the mass of the spring. This force tends to keep each particle of the spring in the position it occupies when the blow is struck. The coil at the end where the blow occurs is under the influence of the inertia of practically the whole spring, while succeeding coils are subjected to less and less inertia, not only because there is less mass back of them, but also because, as we approach the stationary end of the spring, each succeeding coil has less actual motion, and therefore is accelerated less.

With the cam pressing directly on the lowest coil, which is subjected to the resisting inertia force of almost the whole spring, this coil will close up most, and each succeeding coil less. This occurs during the first part of the compression of the spring, while the mass of the spring is being accelerated in the direction of compression. During the last part of the compression movement, conditions are the exact opposite. The mass of the

spring then decelerates, the force of inertia is in the same direction as the pressure of the cam, and during this part of the cycle the coil farthest from the cam closes up most. In between, there is a point at which there is no acceleration in the rate of compression of the spring and at which, therefore, all the coils close up uniformly. Since the coils close up most first at one end then at the other end of the spring, the final effect is that the central portion of the spring approaches first one end then the other end.

The most widely employed precaution against spring breakage due to surge consists of winding the coils at the stationary end of the spring so close that they will be entirely closed when the valve is fully lifted.

Owing to the very small absolute motion of the coils at that end, this can be done without the risk of making the spring noisy, and, if the coils near the stationary end cannot exceed their intended motion, spring surge, if not entirely eliminated, is at least materially reduced.

So you see, the closed coil springs are placed at the stationary end of the

spring which accidentally happens also to be what you term the hot end.

Battery Overloads

It is said that a starting motor requires anywhere between 150 to 300 amperes. How does this come out of a battery that is rated 100 or 125 amperes?—W. R. McMann, 234-238 East 85th St., New York, N. Y.

THE reason that starting can place such a load on the battery is that a lead-plate battery, such as is used for starting, can stand a terrific overload for a short period without doing itself any harm. An alkaline-type battery could not be used for starting purposes, as it cannot stand the necessary overload.

Naturally, if you subjected a conventional starting battery to the full starting load for more than a few moments, the battery would soon be ruined. However, it is subjected to the load of 200 or 300 amperes for usually less than a moment at a time and then it has a chance to cool and also receive a recharge from the generator.

Voltage Regulator

When the points of three-unit voltage regulator are opened by finger, will the ammeter hand drop to zero or will it register a few amps.?—*Laurence Colbresse, Glendive, Mont.*

WHEN the points of a three-unit voltage regulator are open, the ammeter should drop to zero. If it doesn't, you will have some trouble somewhere and I would suggest a careful check of the entire charging circuit.

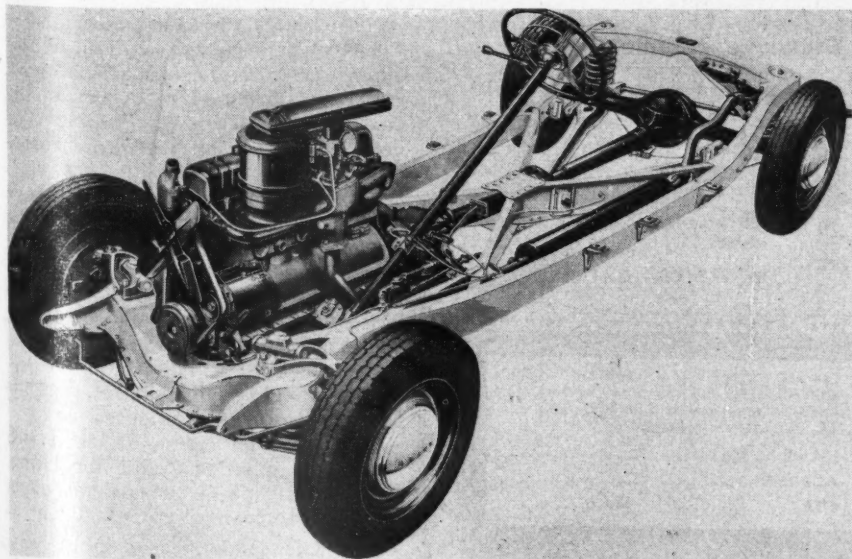
Gear-Shift Noise

I have a 1939 Buick 40 Series on which the steering-column gear shift is noisy. Please send me some information as to the cause and remedy.—*An Illinois Subscriber.*

THERE are two major places in this mechanism at which noise is produced—at the gear-shift lever itself under the steering wheel and at the lower end of the steering column between the shift-control shaft and the steering column.

To correct the noise at the lower end of the steering column, you can obtain anti-rattle springs from your nearest Buick dealer under part No. 1310960, group No. 4.017. This anti-rattle spring or clip, installed between the control shaft and the steering column, will eliminate the noise at this point.

The noise at the gear shift lever occurs at two points—at the lever pivot pin, and between the end of the control shaft and the lever. You can install fiber washers on the pivot pin to make it fit tighter and eliminate the rattle there. You can obtain shims from your Buick dealer and install them between the end of the control shaft and the shift lever to eliminate this rattle. These shims are supplied in thicknesses of .005 in. and .010 in. The .005 in. shim is part No. 1311209, and the .010 in. shim is No. 1311210.



Gas Mileage Drops

I recently tuned up a 1935 Ford V-8 engine, after which the owner got a little better than 17 miles per gallon. Since then, the car has been driven 400 miles, and now the car is delivering only about 13 to 14 miles per gallon.

During this period of 400 miles, the aluminum cylinder head cracked and the owner bought a cast-iron head to replace it.

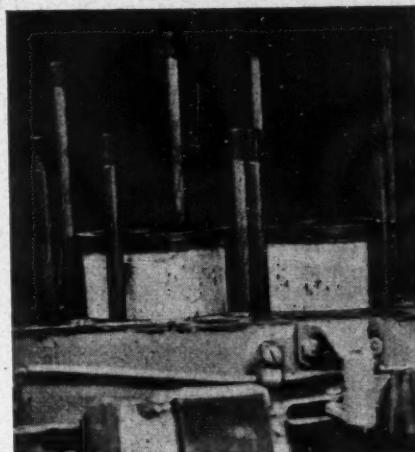
Do you think the cast-iron head has something to do with the drop in gas mileage?—*A New York Subscriber.*

IT is entirely possible that the installation of the cast-iron head in place of the aluminum cylinder head reduced the fuel economy of your customer's Ford V-8. You could undoubtedly improve this mileage by retiming the distributor. However, if he installed only one cast-iron head, which you imply in your letter, I am inclined to believe that it would be very difficult to get satisfactory performance under those conditions. If he is using one cast-iron head and one aluminum head, I would suggest that you advise him to change, so he uses the same type of head on both banks of the engine, and then tune the engine and pay particular attention to the distributor advance.

Ignition Timing

Please send me the timing for a 1937 Lincoln-Zephyr V-12, also wiring instructions for timing.—*L. J. Hart, R. No. 7, Box 598-B, Indianapolis 44, Ind.*

WHEN timing the ignition of the 1937 Lincoln-Zephyr, the breaker points should open four degrees before top center. The cylinders in the left bank are numbered 1-3-5-7-9-11, while the numbers for the right bank are 2-4-6-8-10-12. The firing order is 1-4-9-8-5-2-11-10-3-6-7-12.



Pulling Sleeves

We have an International Tractor, Model 1-12, Series No. 2194, and I want to pull the sleeves out and install new ones. How are the sleeves installed to keep water from leaking into the crankcase?—*An Illinois Subscriber.*

ON the International tractor, Model 1-12, the cylinders are pulled out through the top of the cylinder block. To do this, a special puller is required. I am quite sure that you can secure a satisfactory puller from any automotive jobber.

To prevent leakage of water from the bottom of the cylinder sleeve, a sealing ring is provided. This is, of course, necessary only on those models which have the wet-type sleeve. On the dry sleeve, no sealing ring is necessary. When removing these sleeves, be sure the lower shoe of the puller does not extend beyond the outer diameter of the sleeve. Also be sure that there is ample clearance between the top of the sleeve and the puller bracket.

Hard on Spark Plugs

I have a 1934 Chevrolet Standard, and I cannot keep spark plugs in it. Have used several different makes, but they go bad, and not in any particular cylinder. The engine delivers about 700 miles to a quart of oil and 18 to 20 miles to a gallon of gas.

I installed a new coil, which helped some. When the wire is held away from the plug the spark will jump about 1/2-in. Plugs are set at .032 in. gap.—*A California Subscriber.*

NOTE you have tried several different makes of spark plugs, but you do not state that you have tried plugs having different heat ranges. Quite possibly a colder-running plug would overcome your trouble. As another suggestion, if the carburetor is adjusted too lean, it will tend to make the plugs fail. I would suggest that you first check over the carburetor and make sure that it is okay, and, secondly, that you try a cooler-running plug.

Dope on Carburetors

(Continued from page 27)

"You mean plain heat?" said Tommy. "Why, sure. You know what happens when you put a pan of water on the fire. If the heat is high enough, the water boils away, which is just another way of sayin' it evaporates fast. Even if the water don't boil, it evaporates faster than it would if it was cold.

"The other way to make water boil fast is to put it in a vacuum. We say water boils at 212 degrees

Fahrenheit because we live pretty close to sea level where the normal pressure of the atmosphere is 14.7 pounds per square inch. A couple thousand feet above sea level, water boils at a lower temperature. When their ain't no pressure at all, it takes hardly any heat to make it boil.

"Ever see one of them trick thermometers with a good-sized bulk of colored water? You hold the bulb in your hand a few seconds and the water boils. That's because the inside of the bulb is a vacuum and water will boil in a vacuum at the temperature of the body. So, if we can introduce gasoline into a vacuum, or

even a partial vacuum, we can speed up evaporation."

Tommy rubbed the lobe of his ear. "But how can you do all that?"

"It's all done right in the carburetor," said Pop. "The gasoline enters the carburetor as a liquid. It is drawn from the jet in the form of a fine spray into a partial vacuum. Then —"

"But," interrupted Tommy, "where do you find a vacuum in a carburetor?"

"That's a fair question — and a mighty important one." He picked up the partially disassembled carburetor. "You see this tube? That's where the air and gasoline mix. The opening is fairly large at this end, but at the jet it narrows down. A restriction like that in a tube is called a Venturi, after the Italian scientist who thought of the idea. The Venturi restricts the flow of air a little before it is drawn into the mixin' chamber. The mixin' chamber is a good deal wider than the Venturi, so the air bein' sucked in ain't quite enough to fill it, and we have a partial vacuum.

"By now, the gasoline has been reduced to fine particles by sprayin', and evaporation has been speeded up by the partial vacuum in the mixin' chamber. All it needs now is a little heat, and it gets that in different ways, accordin' to the design of the car.

"Sometimes the intake manifold runs right along with the exhaust manifold so that the heat is transferred. Some intake manifolds even have fins on the inside to carry more heat. The mixture from the carburetor passes through this heated manifold and evaporation is completed. The liquid is now a gas.

In most cases, though, heat from the exhaust manifold is circulated around the throat of the carburetor. The amount of heat is controlled by a thermostat to regulate the rate of evaporation.

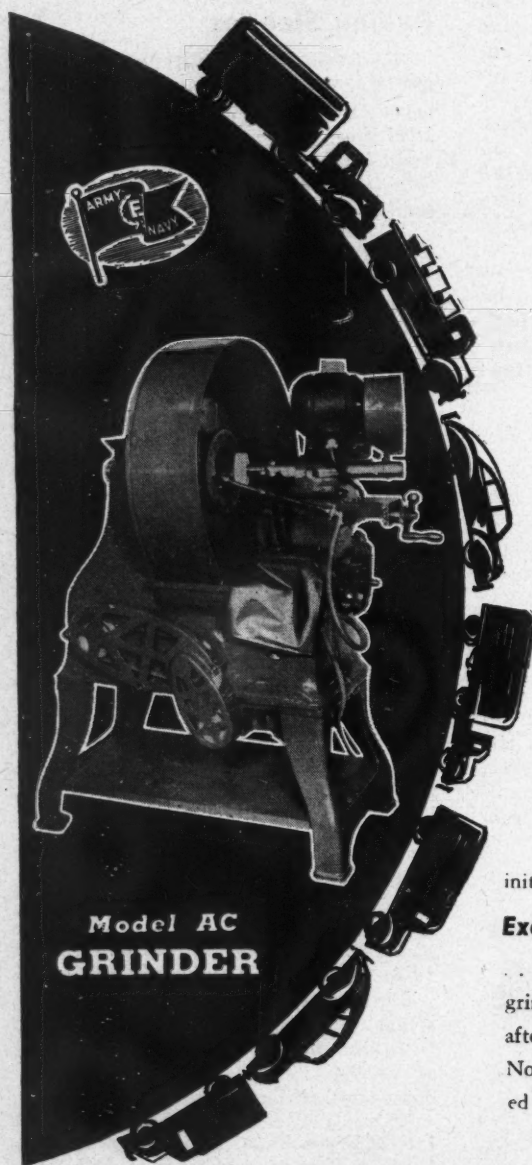
Tommy wagged his head. "I never had an idea that so many different things took place in a carburetor."

"That's not half of it," said Pop, still holding the carburetor body. "The modern carburetor does a half dozen things automatically that gave engineers plenty of headaches in the early days. Take the problem of gettin' a mixture of the right proportions to the engine at any speed.

"So all modern carburetors have some kind of a device in it to keep the mixture as uniform as possible at all speeds. It takes different forms. Sometimes it's an economizer valve, or power jet, sometimes an air bleed, sometimes both. The purpose is the same whatever it is. That's to provide the right proportion of gasoline and air at any engine speed.

"You see, an engine needs a rich mixture to start easy and for idling. At average speeds, it can get along on a fairly lean mixture. Then, at

(Continued on page 50)



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Dope on Carburetors

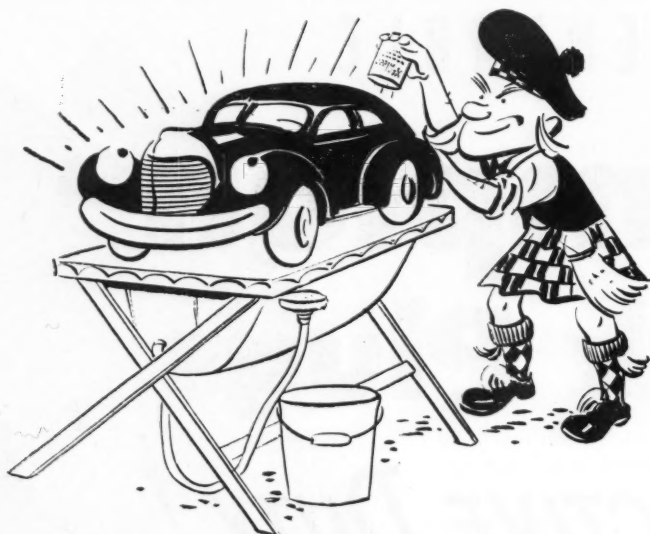
(Continued from page 48)

high speed, the mixture has to be richer. If you have just a plain-tube carburetor and set it for a rich mixture for idling, the mixture would keep right on gettin' richer and richer, and you'd waste gas.

"On carburetors that only use an air bleed, a jet lets air mix with one flow of gasoline to the carburetor. This would tend to make the mixture leaner at high speed, so a plain jet is also provided. As I just said, the

mixture from a plain jet gets richer at high speeds. With the two jets, one compensates for the other's failin's, and keeps the right kind of mixture flowin' to the engine whatever the speed.

"Then there's the carburetor like we have here. It uses what's called an economizer valve. It's set for a lean mixture at low speeds. Then when the engine picks up speed the decrease of vacuum in the intake manifold lets the economizer valve open and feed the fuel needed by the engine at high speed." On some makes, the economizer is operated mechanically.



It Pays to "BABY" Cars—and Customers too!

Some service operators say doing business nowadays isn't much harder than it ever was—but most of the fun has gone out of it. That's as it should be, for winning a war isn't fun. In their determination to stay in business despite parts and material curtailments imposed by war restrictions, service operator's eyes have been opened to new ways in which they can help the war effort—and make money too!

As America's cars and commercial vehicles have become more precious—as the need for their protection and insured longer life became more evident, they have come to learn that it pays to help "baby" the cars, trucks and trailers which must carry us through to victory. The help they are extending is through the use and sale of such preventive maintenance products as McAleer Automotive Finishing Materials.

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Offering preventive maintenance finishing services and selling automotive finishing materials is putting plenty of new customer names in the books of wise service merchandisers. These services and products will stand them in good stead in future days of doing business and McAleer is being rightfully counted upon to help stimulate the record growth of business they see ahead.

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As Pop finished speaking, Tommy frowned. "There's something I don't get," he said. "If the carburetor is set lean, how do you get the rich mixture you need when you start?"

"Well, first," said Pop, "there's the automatic choke that's used on all modern cars. It's operated by a thermostat and cuts down the air intake until the engine has turned over long enough to heat the exhaust manifold.

"Then," Pop continued, "there's the acceleratin' pump. This is connected with the throttle so that it operates when the throttle is opened, shootin' an extra spurt of gasoline into the mixin' chamber to help the engine pick up fast."

Tommy looked admiringly at the carburetor on the bench. "That sure is a slick gadget," he said, "to do all those things. You'd think they'd give out oftener than they do."

"All you have to do is clean 'em now and then and adjust 'em once in a while. Adjustin' 'em is another story. We'll get into that some day when I've got more time. Right now I've got to eat supper. If there's anythin' to this gag about bein' what you eat, I ought to be a regular."

"What's that?" asked Tommy.

"I don't know. But I sure like to eat regular."

Takes Charge of Sales

Announcement of the appointment of Al F. Rust as manager distributor sales of The Gabriel Co., Cleveland, is made by L. W. Klein, executive vice president.

Rust brings with him a wealth of experience acquired over many years with the Chevrolet Motors Division of the General Motors Corp. These included parts and accessory merchandising manager, district sales manager, retail sales training and promotion manager, used car sales training and reconditioning manager, and assistant zone manager in charge of new car sales.

In his new position, Rust will co-operate directly with Gabriel distributors and jobbers.

Seiberling Net Lower

A net income of \$609,301 after federal taxes, based on net sales of \$18,273,782, was reported for Seiberling Rubber Co. Dec. 27 by J. P. Seiberling, president, in the company's annual report to stockholders.

The 1943 figures showed a 16.8 per cent decrease in net profits in the face of the largest net sales in the company's history—a 56 per cent increase over 1942—because of mounting taxes.

Total current assets of \$5,381,847 compared with liabilities of \$1,508,225 to show a ratio of 3½ to 1. The assets included \$100,000 in United States Savings Bonds. Provision has been made for \$1,411,000 to cover federal income and excess profits taxes.



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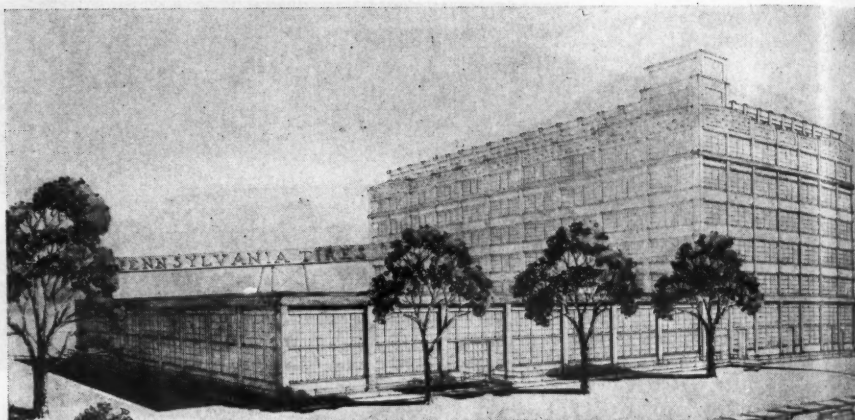
BEARINGS • SLEEVES • PUMP PARTS
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FEBRUARY, 1944

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51

Architect's drawing of the Pennsylvania Rubber Co. plant at Jeannette, Pa., showing the one-story extension started recently. It gives the plant an additional 40,000 sq. ft.



Defective lighting is sabotaging irreplaceable equipment. Trucks, cars, and buses vitally needed in the war-effort, are being put out of commission through careless lighting. These are not idle statements, but actual facts. National Safety Council figures, for example, show that by far the greatest number of accidents are at night, and in almost every case the cause is poor lighting.

The Office of Defense Transportation, the American Trucking Association, and innumerable state associations are doing everything possible to encourage care of equipment. You help by doing what you can to encourage proper lighting. We will help by making an extra effort to supply headlamps, fog lamps, and marker lights, as well as switches and replacement parts. Contact your jobber salesman.



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Extends Tire Plant

Pennsylvania Rubber Co. started rush construction late in December of an addition to its main factory at Jeannette, Pa., which will increase its capacity for manufacturing synthetic-rubber truck tires by approximately 30 per cent, according to an announcement by P. C. Mathewson, vice president in charge of manufacturing.

"We are planning to rush the new building to completion in about four months' time to help avert the critical truck tire shortage which Rubber Director Dewey warns may come to a head in the next six months," Mathewson said.

The structure, for which ground was broken several weeks ago, is immediately adjacent to the present main building. Its one story will provide at least an additional 40,000 sq. ft. of space.

Named Promotion Chief

Charles C. Main, popularly known in the automotive industry as "Curt," has been promoted to sales promotion manager of the Kellogg Division of American Brake Shoe Co. at Rochester, N. Y. Main is now making Rochester his headquarters.

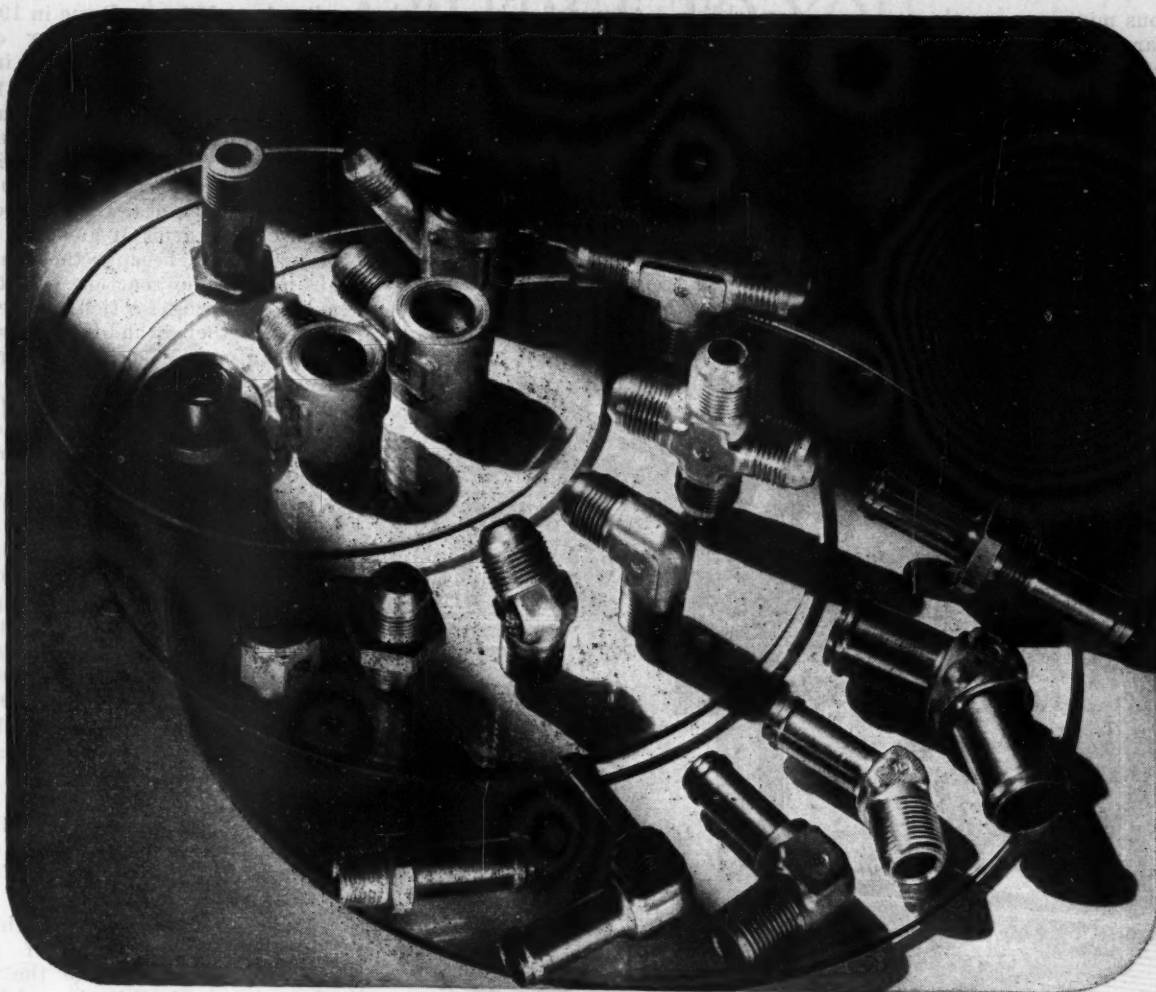
He had been serving as New York district manager for the past three years, following his joining the Kellogg organization in 1939 as Philadelphia district manager.

Main enjoys a wide acquaintanceship in the automotive and industrial fields, dating back to the period before World War I when he sold air compressors to jobbers.

Becomes Vice President

Appointment of Henry Rowold as vice president of Mack-International Motor Truck Corp. has been announced by F. F. Staniford, president.

Rowold joined the Mack organization in 1919 in a clerical capacity and later became executive assistant to the president. He was placed in charge of national account sales in 1939, and as vice president will continue in that capacity. He is also a committee member of the Central Truck Tire Rationing Board of OPA.



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2,200 M.P.H. Planes?

(Continued from page 23)

of a gaseous mixture upon the atmosphere, bears no further resemblance to a rocket. The propulsion unit burns either gaseous or liquid fuel, and thus needs atmosphere to support the combustion. It could be regarded, in fact, as simply an alternative method of converting the energy of expanding gas into mechanical work. In the internal-combustion engine, this energy acts on a movable piston; in the jet-propulsion plane, it acts directly on the atmosphere.

If the latter method of propelling a plane does not seem too efficient, it must be remembered that the efficiency of the ordinary airplane is not remarkable. A propeller has a high rate of efficiency, say 80 to 85 per cent, but that of the internal-combustion aircraft engine is only about 30 per cent, giving an overall efficiency for the plane of only about 25 per cent. That is, only a fourth of the potential energy of the fuel is utilized.

In a general way, the jet-propulsion plane is driven by admitting air, expanding it by heating, and then expelling it from the tail. The actual operation, however, involves several

additional steps and numerous refinements. At least, this is thought to be true of the Caproni-Campini plane which made the historic flight of 168 miles from Milan to Rome in 1940, for Secondo Campini, inventor of the plane, had indicated as much in aviation publications and in patent papers.

The problem of designing a practical jet-propulsion plane, as already suggested, consists of obtaining an efficiency higher than that of internal-combustion engines. It is easy enough to discharge a jet of gas into the atmosphere but, because the density of air is low, the reaction is not great unless the cross section of the jet is large. Further, it had been shown that heat can more efficiently be converted into mechanical energy when fuel is burned in compressed air instead of at atmospheric pressure. These principles were incorporated in Caproni's early design.

In this design, air was admitted through a ring-shaped opening around the nose of the plane, and conducted to a centrifugal compressor. Two methods of operating the compressor were suggested. One was an ordinary internal-combustion engine, the other a gas turbine, driven by the same stream of gas as propelled the plane.

Next, if an internal-combustion engine was used, the compressed air passed through the radiator of the engine's cooling system. Then it passed through three ducts, two leading directly to the combustion chamber, the third being restricted in the form of a Venturi tube.

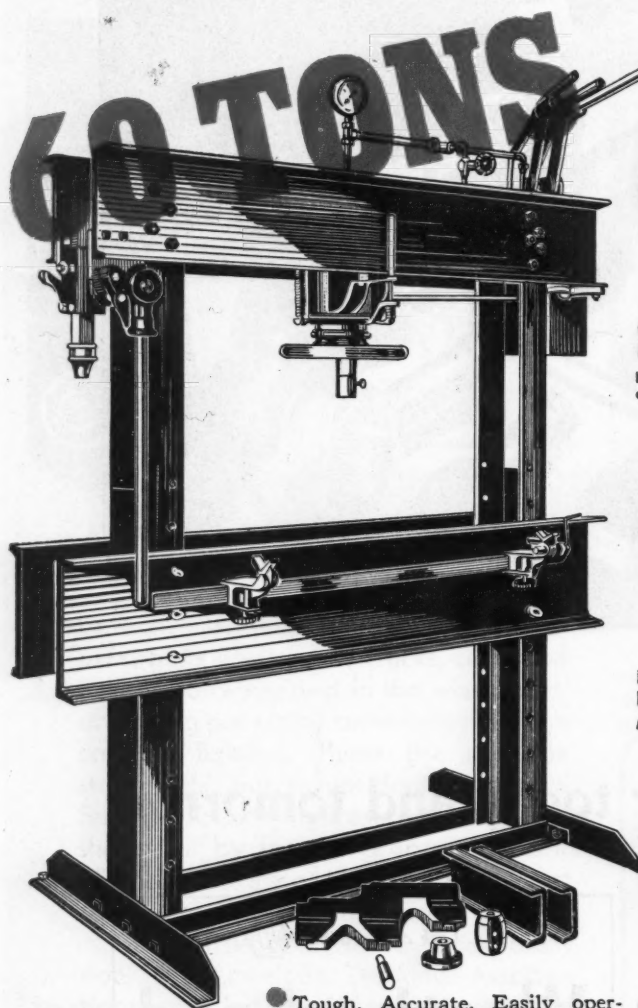
Immediately ahead of the throat of the Venturi, a series of nozzles sprayed liquid fuel into the throat, where it mixed with air and burned. Combustion increased several-fold the volume of air in the combustion chamber. The gases of combustion, at the outlet from the Venturi tube, mixed with the air flowing through the unobstructed cuts and increased its velocity. Then the whole mass, air as well as combustion gases, was discharged from the tail duct, pushing against the atmosphere behind and driving the plane ahead.

The ultimate speed that could be attained by an ideal jet-propulsion plane is staggering. Theoretically, the speed of the plane should be half the speed of the jet of gases discharged, and, in rockets at least, a gas velocity of 7000 ft. a second is considered possible. Half that speed would be better than 2200 m.p.h.

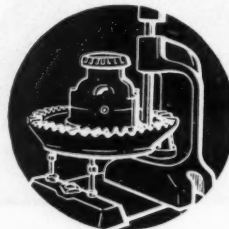
Such tremendous speeds are difficult to imagine. The stresses they would impose upon the structure of a plane in all probability require revolutionary changes in design. Whether or not human pilots could withstand meteoric flights is a problem which it would be wise not to worry too much at present.

On the basis of the showing of the Caproni-Campini plane in Italy in 1940, jet-propulsion planes are a long

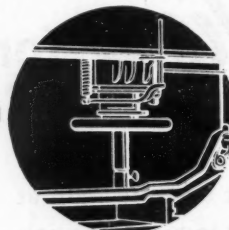
(Continued on page 56)



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BLACKHAWK

Why Brakes Drag

(Continued from page 28)

Polish the brake-shoe bearings and the anchor pin bearings. Lubricate the bearings with a suitable lubricant that will not run down on the linings, and replace the shoes, brake drum and wheel.

The third reason for the brakes on one-wheel dragging is that the shoes are set too close to the drum (E). This excess friction causes the shoes to heat, forcing the shoes into contact with the drum. To remedy this con-

dition, reset the shoe eccentrics but do not change the anchor-pin setting.

The fourth cause of dragging brakes on one wheel is distorted wheel-cylinder cups (F). If a wheel cylinder has been repaired or overhauled, kerosene, gasoline, or some other fluid containing mineral oil may have been used as a cleaner. This will cause the cups to swell and will retard the return action of the shoes. This in turn will cause the brake drum to heat and will force the shoes into contact with the drum. This condition can be overcome by removing the wheel cylinder, disassembling the unit, washing all parts thoroughly in

alcohol, and replacing the wheel-cylinder cups. When reassembling the unit, all parts should first be dipped in brake fluid.

A loose or badly worn wheel bearing (G) is the fifth condition that can cause the brake on one wheel to drag. A loose or badly worn wheel bearing allows the brake drum to contact the brake shoes, putting a constant drag on that particular wheel. Readjustment or replacement of the bearing will correct this condition. The brake shoe may also need readjusting at the eccentrics only. The anchor adjustment should not be disturbed.

On cars that utilize the rear brake shoes for the hand brake, there is a sixth reason for one wheel brake to drag. The cables that operate the rear shoes may become worn or frayed (H), causing them to stick in the conduit and not allow the shoes to release, or the cable may become frozen in the conduit, causing the same condition. If the cable is badly worn or frayed, it will be necessary to replace the cable assembly. If the cable is frozen in the conduit, it can sometimes be freed up, but replacement of the cable assembly is probably a more satisfactory remedy.



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SLEEVE BEARING

455 S. MILL STREET



THE MOST COMPLETE SLEEVE BEARING SERVICE IN THE WORLD

BRONZE

HEADQUARTERS

NEW CASTLE, PA.

Lundgren Goes to Coast

President F. M. White has announced the transfer of A. A. Art Lundgren to California to take over the general supervision of the Burd Piston Co.'s expanding business in the Pacific coast area.

Lundgren joined the company in 1922. He has served as vice president and general sales manager and for 21 years has been on the board of directors. He will continue to serve on the board, and, with his background of 22 years in the home office, his transfer to California will give him new opportunities for service in the expanding industrial empire of the West.

He will also realize a long-held personal ambition to live on his citrus fruit ranch near Fontana, in San Bernardino county, Cal., where he plans to devote his spare time to raising oranges and grapefruit.

2200 M.P.H. Planes?

(Continued from page 54)

way from entering any speed race with bullets. The average speed of the Italian plane for 168 miles was 130 m.p.h. Unquestionably, improvements have been made since 1940, for the new British-American plane is said to promise speeds in excess of any now possible for ships powered by internal-combustion engines. That does not mean anything like 2200 m.p.h., but more probably 400 to 500 m.p.h. in level flight.

MAREMONT *has what it takes!*

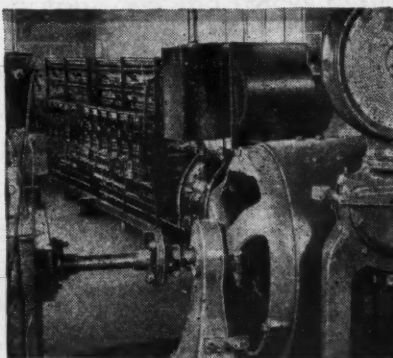
TESTS that TELL!



Behind MAREMONT Muffler leadership:

- 1 Laboratory tests that tell. ✓
- 2 Heavier gauge "terne plate" steel.
- 3 Self cleaning action.
- 4 Superior construction.
- 5 Most complete line of replacement mufflers.
- 6 Scientifically engineered design.
- 7 Centralized major market distribution system.

Birthplace and control center of the many outstanding and exclusive MAREMONT muffler features is the scientifically equipped MAREMONT research and testing laboratory. Here the latest in precision instruments are used in developing and perfecting MAREMONT mufflers under actual operating conditions.



The Dynamometer permits MAREMONT'S laboratory staff to test each muffler under conditions of light and heavy loads comparable to going up and down hill at low and high speeds.



With this Mercury Manometer MAREMONT mufflers are assured of minimum back pressure. This precision instrument measures in pounds per square inch muffler back pressure.



The contact Pyrometer measures muffler surface temperature. Such tests permit MAREMONT engineers to determine and eliminate "hot spots" which shorten the life of mufflers.



MAREMONT uses all known precision instruments for muffler sound testing. Three separate tests enable MAREMONT to design mufflers that meet most pleasing acoustical standards.

MAREMONT

SINCE 1877

Terne Plate MUFFLERS

Maremont Automotive Products Inc., So. Ashland at 16th, Chicago 8, Ill. - Makers of MAREMONT Alloy Steel SPRINGS

Super Service

(Continued from page 29)

service prospects. The front had to stand on its own feet and show a profit and it did. Although he is in business to serve the customer, Scheer is one of those who believe that free service was carried to extremes before the war. Scheer believes in giving competent, cheerful, and satisfactory service for a fair price, no less, no more.

Immediately following the war, Scheer thinks, there will be a tre-

mendous boom in service volume. And he will be in the service business. It has paid him well up until now and he has no reason to feel that it won't pay him in the post-war era. And he firmly believes that his present set-up will help.

During the war, of course, the least of an automotive shop's worries, is getting customers. In Scheer's case, his cares are exactly the reverse. The draft and war industries have hit his shop personnel hard. By working long hours himself, with the aid of a skeleton force, he is able to keep going and stay in the black. He has closed his wash rack and declines to do any

service that is not strictly necessary. In that way, he is able to keep the cars of regular customers running, which is returning loyalty for loyalty.

He feels that the customers he takes care of now will remain loyal to his shop after the war. And, when mechanics return from war and war plants, and he can again handle a volume of work, he will depend upon his super-service set-up to bring him that volume.

Holds Sales Meetings

R. M. Hollingshead Corp., Camden, N. J., recently held a five-day sales conference of its Whiz Automotive Division which brought together the entire selling organization in the United States and Canada.

The meetings were devoted to talks by Hollingshead executives on the advantages and new developments in each of the Hollingshead Whiz automotive products. Sales and promotion plans for 1944 were discussed in detail and several talks were given on current conditions and opportunities in various markets such as aviation, fleet, automotive jobbing, farm, etc.

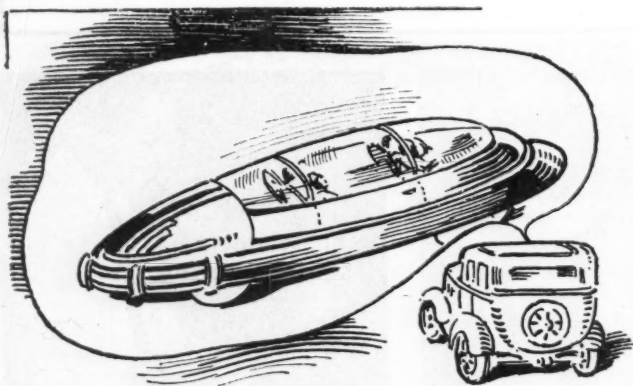
Guest speakers included George B. Shearer, President, Gaul, Derr and Shearer Co., Philadelphia; Martin E. Goldman, partner, The Aitkin-Kynett Co., Philadelphia; Lloyd E. Partain and Allen Church, *Country Gentleman* magazine; A. A. Ahrens, McGraw Hill Publishing Co.; H. C. Fischer, Editor, Fleet Owner; W. K. Toboldt, Editor, *MOTOR AGE*; H. H. Clark, President, Ferguson Publishing Co., etc.

Chicago Veteran Honored

Henry R. Levy, president of the Studebaker Sales Co. of Chicago, was recently tendered a testimonial dinner attended by more than 150 business associates and personal friends. The function, held at the Palmer House, was a tribute to Levy's distinguished business career in Chicago. In addition to a number of prominent Chicagoans, the guest list included members of Levy's organization and a group of Studebaker factory officials.

Levy entered the local automobile field in 1908, after having served his apprenticeship as salesman for his father, Simon Levy, who sold Studebaker wagons and buggies in Chicago's northwest side at the turn of the century. His first position was with the retail branch of Studebaker Brothers' Manufacturing Co.

In 1918, when the Studebaker factory withdrew from the retail field in Chicago, Levy became vice-president of the privately owned distributorship which took over the franchise. One year later, he purchased full control of the organization, and became president.



*Wonder what an old
jalopy thinks about!*

Well, I'm living on borrowed time, but it won't be long before my successor will be rolling over the highways in a happier post war world. RBC BEARINGS have served me well all my life. Now RBC engineers are in a huddle, looking ahead and planning for tomorrow's car (though 1942 models will have the new car spotlight immediately after the war). But until that day comes, take care of my bearings and I'll see you through.

RBC

ROLLER BEARINGS

ROLLER BEARING CO. of AMERICA
TRENTON . . . NEW JERSEY

Precision-built AC Spark Plugs have the acceptance that holds old friends, and makes new friends, for YOU

On every street and highway, and on farms all over your state, you will find cars, trucks, buses, and tractors which AC Spark Plugs are *keeping on the job*. That's the kind of performance that *builds, and maintains, acceptance*.

AC Spark Plugs are undergoing constant improvement, through research and through constant contact with engine manufacturers and technicians of the armed forces. And AC's were the equipment plugs in more than two out of every four cars and trucks built since 1932.

There never was a time when AC reputation and acceptance were higher with *your* customers.



SPARK PLUGS

Let's ALL BACK THE ATTACK with WAR BONDS

FEBRUARY, 1944

When writing to advertisers please mention Motor Age

Field Service Department, AC Spark Plug Div., G. M. Corp.
910 Union Industrial Building, Flint, 3, Michigan
Gentlemen: Please send me at once, no charge, the
AC Shop Manuals checked:
☐ HOW TO SERVICE SPARK PLUGS ☐ How to Service Fuel Pumps
☐ How to Service Spark Plug Cleaner ☐ How to Service Air Cleaners
☐ How to Service Oil Filters ☐ How to Service Speedometers
☐ How to Service Ammeters and other Instruments

NAME _____
FIRM _____
STREET ADDRESS _____
CITY _____ STATE _____
MA-2

SEND FOR AC'S SHOP MANUALS

Tire-Repair Standard

After more than a year of study and conferences with industry representatives, the National Bureau of Standards has promulgated Commercial Standard CS110-43, covering the vulcanized tire repairs of passenger-car, truck, and bus tires.

The standard covers the inspection of carcasses to be repaired, the types of injuries that may be repaired, the preparation of the tire for repair, and the method of repair and curing. Repairs made in conformance with the standard would be guaranteed for the remaining life of the tread and the

owner would receive a label of guarantee, the form of which is prescribed.

Entirely voluntary, the standard has been adopted by more than 1,000 tire-repair shops throughout the country. The standard is not to conflict with any war-agency rules on tire repairs.

Army-Navy "E" Awards

U. S. Asbestos Division, Raybestos-Manhattan, Inc., Manheim, Pa.

Mechanics Universal Joint Division, Borg-Warner Corp., Rockford, Ill. (Star)

Takes Charge of Sales

John Gallagher has been appointed sales manager of The AP Parts Corp., Toledo, Ohio, according to an announcement by W. E. Bullock, vice president.



John Gallagher

Gallagher started with AP in 1931 in the sales department, later serving as territory representative in several regions throughout the country. Bullock further announced the appointment of Gordon L. Cunningham as assistant sales manager.

Both appointments were effective Jan. 3, 1944.

Higgins Named President

At a meeting of the board of directors of the Pittsburgh Plate Glass Co. in New York, Dec. 15, the following changes in executive personnel were approved, to become effective Jan. 1:

Clarence M. Brown has resigned as chairman of the board of directors, but will remain active on the executive committee, on the board, and as chairman of the finance committee. Harry S. Wherrett, now vice-chairman, will become chairman of the board. Robert L. Clause, now president, will become vice-chairman of the board, and Harry B. Higgins, now executive vice-president, will become president.

Heads Account Sales

Herbert King, vice president in charge of sales of the National Battery Co., has announced the appointment of W. C. Shull as manager of national account sales. He succeeds J. C. Hammond, who leaves the battery industry to become sales manager of the Franklin Transformer Manufacturing Co.

Shull, a graduate of Yale, became associated with the National Battery Co. in 1937 following two years as traffic representative of Northwest Airlines.

Becomes Ad Manager

Appointment of H. E. Van Petten as manager of the B. F. Goodrich advertising division has been announced by Frank T. Tucker, Goodrich advertising director.

In his new capacity Van Petten will have charge of tire advertising which had been under the direction of George F. Cozzens, who has joined the Army, as well as the advertising of the firm's industrial products and Koroseal. Mr. Van Petten has been in the rubber industry for 16 years.



America's leading mechanics know from past experience that concentrating on the P & D complete quality line wins friends, success and profit.

P & D products are a result of concentration on making the finest ignition replacement parts for trucks, buses and passenger cars.

P & D products enable bus and truck operators, as well as repair shop owners and service stations, to maintain and increase profitable operation because the three benefits of concentration are always there with P & D.

P & D PRODUCTS ARE DOING
THEIR BIT WITH OUR ARMED
FORCES IN VARIOUS
THEATRES OF WAR

3 P & D BENEFITS

- 1 Minimum inventory, because one complete line.
- 2 The best is always at hand, because P & D make only one quality ... the finest.
- 3 Customer satisfaction because good work plus P & D parts means peak performance.

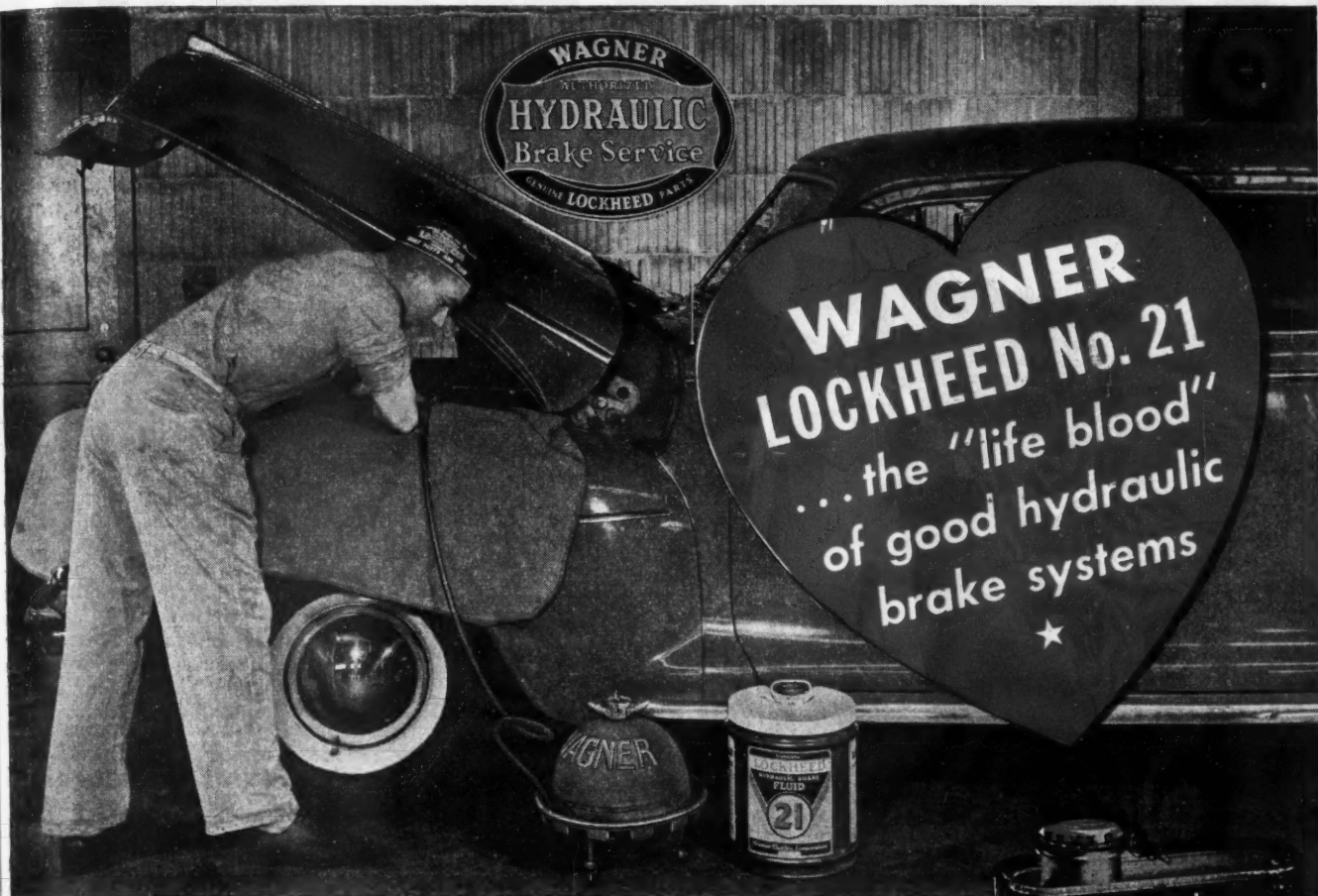


YOU CANNOT PURCHASE ANY FINER QUALITY

P & D MANUFACTURING COMPANY, Inc.

LONG ISLAND CITY, NEW YORK
STARTING • LIGHTING • IGNITION
REPLACEMENT PARTS

P & D MANUFACTURES ONE COMPLETE QUALITY LINE. ONLY THE FINEST MATERIALS AND WORKMANSHIP OBTAINABLE ARE EMPLOYED



YOU know that brake fluid should be kept to a prescribed level in the master cylinder of any hydraulic brake system in order to assure maximum efficiency.

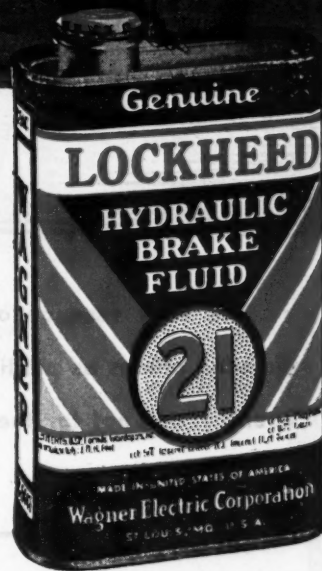
Unfortunately most owners of cars and trucks do *not* know how important it is to have the fluid level checked periodically.

You can help make your customers' vehicles *last longer*, and you can improve your business, if you will offer to check the brake fluid in every automobile you service.

When additional fluid is needed—recommend WAGNER LOCKHEED No. 21—it's the "life blood" of good hydraulic brake systems.

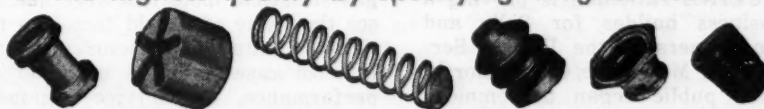
No. 21 is the recognized leader. It is recommended for *all* hydraulic brakes. It retains its highly efficient qualities under all driving conditions. It completely and properly mixes with all other approved fluids, furnishes necessary lubrication for working parts of the hydraulic brake system, and, in general, preserves the essential characteristics of the entire system.

Wagner is doing everything possible to keep you and other dealers supplied with No. 21 Fluid. Whatever the size or shape of the container, Wagner No. 21 will be readily recognized by the familiar red, white, and blue design with No. 21 in the circle.



WAGNER
Automotive Products Include:
LOCKHEED
HYDRAULIC BRAKE FLUID
LOCKHEED
HYDRAULIC BRAKE PARTS
CoMaX
BRAKE LINING
WAGNER
AIR BRAKES
TACHOGRAPH
(Recording Speedometer)

Whenever brakes need to be repaired, you'll get parts of the highest quality by specifying Wagner Lockheed



There is a Wagner jobber near you who can supply Wagner Lockheed Brake Fluid. He can also supply Wagner Lockheed Brake Parts for repairing brakes on all makes of cars and trucks. If you don't know his name, please write us today.

H44-1



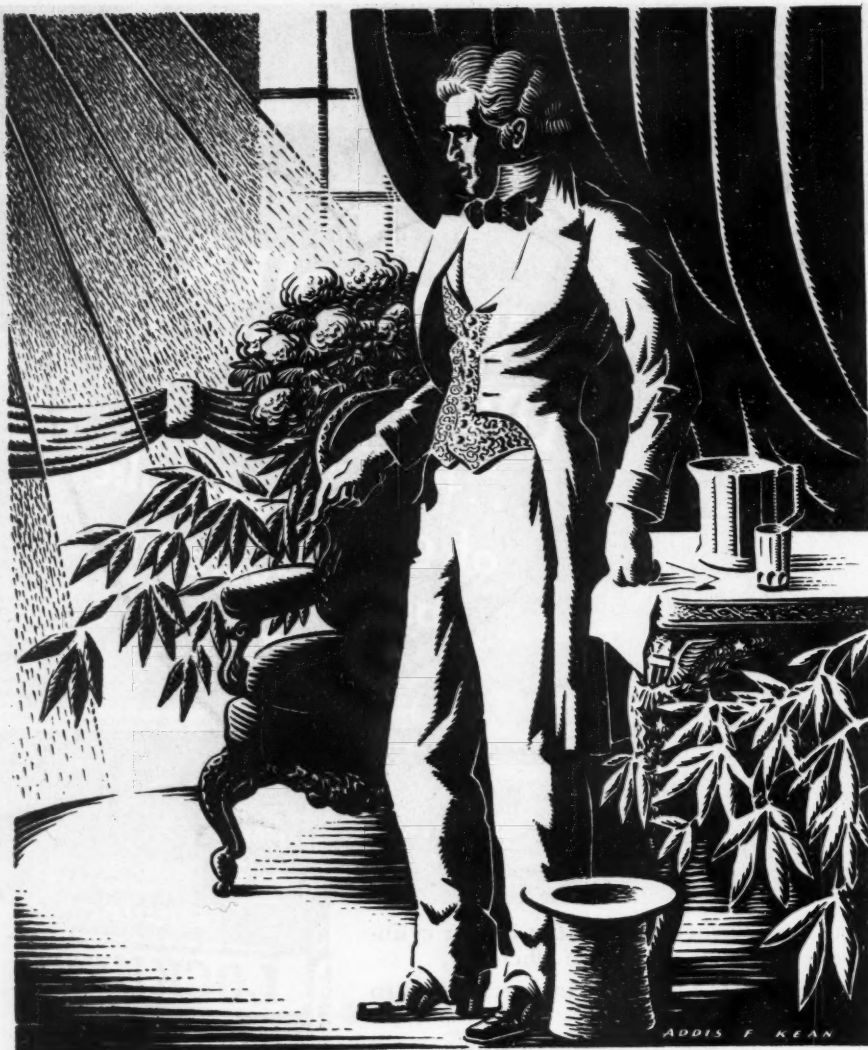
BUY U.S. WAR BONDS and STAMPS

Wagner Electric Corporation

ESTABLISHED 1891

6498 Plymouth Avenue, St. Louis 14, Mo., U. S. A.

AUTOMOTIVE AND ELECTRICAL PRODUCTS



The very essence of a free government consists in considering offices as public trusts, bestowed for the good of the country, and not for the benefit of an individual or a party.

John C. Calhoun

Ration Service

GASOLINE rationing is proving a business builder for Sells and Putnam, owners of the Hilltop Service Station, Meigsville, Ohio. Shortly after the public began to comment upon the handicaps of fuel conservation, Sells and Putnam placed this ad in the local newspaper:

A PATRIOTIC WAY TO BEAT GAS RATIONING.

Drive in and let us check your carburetor, valves, and ignition. Our check-up may, and often does result in 10 per cent to 20 per cent more mileage from an allotment of fuel.

HILLTOP SERVICE STATION.
Due to general concern over the

gas situation, motorists were quick to see the value of an old fact in a new light. Finding that motor inspection in most cases resulted in better car performance, the service became a regular feature with Sells and Putnam, and as a result, station business has been boosted nearly 40 per cent.

"A station owner," Joe Sells, the manager, declares, "can often make restriction a business builder instead of a headache. Present fuel conditions provide excellent opportunities of driving home the fact that efficient motor operation means both a saving of fuel and better car performance. The station owner profits not only in extending more service but also by

having better-performing motors to work on. Consequently, there are more satisfied customers.

"In our motor check-up service, we find motorists generally careless about little things which tend to waste fuel. Quite often slight adjustments, made at our station, have enabled motorists to get one to five additional miles per gallon of gas. Recently a car owner had a long-standing complaint of low mileage on a certain brand of gas. An ignition adjustment eliminated his trouble. Our motor inspections and adjustments are made at regular service rates.

"By taking advantage of various restrictions as they bob up, we create confidence in our efforts to save money for car owners. Quite naturally they discuss motor problems with us, and these personal contacts aid greatly in smoothing out arguments and dissatisfaction that often results from bans and restrictions. We find also that many lessons thus learned as emergency measures will become a permanent benefit to both our station and its customers."—F. R. Cozzens.

Dealer Plan Ends March 15

Nash Motors Division of Nash-Kelvinator Corp. has advised its dealers that March 15, 1944, has been set as the expiration date for operation of its "Monthly Income Plan" inaugurated as a pioneering aid to war-time dealers shortly after Pearl Harbor. When originally announced on March 16, 1942, the program was to run for only one year, but was extended for an additional year. Basic arrangements of the plan were adopted by at least one competitive company and sometime later by the Reconstruction Finance Corp.

In essence, the dealer monthly income plan provided a means whereby Nash advanced monthly interest charges accruing to dealers on their new-car inventories without delay, thus relieving financial pressure on individual dealers.

To insure that no Nash dealer will be pressed as a result of the discontinuance of the plan, the company will continue to guarantee the advances representing the value appreciation of cars in unsold inventories. The dealer will simply assume responsibility for interest charges after March 15, 1944.

Oppose Tank Inspections

Automotive repair shops in Virginia are voicing vigorous opposition to pending compression-tank-inspection legislation which would compel periodic examination of these pressure vessels as a safety measure. The tanks are used to provide free air for customers. The proposed bill is a legislative version of the boiler code of the American Society of Mechanical Engineers.

JUST OFF THE PRESS!

Another valuable wartime transportation aid from **STUDEBAKER**

HERE'S a new, specially prepared, illustrated, 52-page handbook—"Wartime Information for the Delivery Truck Operator"—that has been acclaimed as one of the most useful home front helps to the war effort in the transportation field.

It tells delivery truck operators exactly what, when, and where they may deliver—summarizes and interprets government regulations affecting truck operations—offers helpful suggestions on truck care and maintenance. This handbook is one of the many continuing special services that Studebaker has been offering the public through its dealers, ever since the war began. It supplements—and effectively implements—Studebaker's extensive and consistent advertising in newspapers, farm papers, national magazines and radio.



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE FOR EMERGENCY MANAGEMENT
WASHINGTON, D. C.

December 4, 1943

THE OFFICE OF DEFENSE TRANSPORTATION
JOSEPH B. EASTMAN, Director

Mr. R. C. Hudson
Manager Truck Division
The Studebaker Corporation
South Bend 27, Indiana

Dear Mr. Hudson:

Thank you for your personal letter of December 2, and for the enclosed copy of your new booklet, "Wartime Information for the Delivery Truck Operator," published by Studebaker as another wartime public service contribution. This booklet impresses me as being a very fine piece of work, and I am sure that it will be very helpful, indeed, in our efforts to bring about the utmost possible conservation of motor truck equipment.

Very sincerely yours,

Joseph B. Eastman
Director

Materials Face Fight

(Continued from page 19)

cars, and that some of them, such as plastics, had not been developed to a point where they could be employed in any radical way. Others insisted, with equal emphasis, that research on the new or heretofore little-used materials had hardly scratched the surface.

Wider use of aluminum in car bodies was freely predicted by a spokesman for an aluminum pro-

ducer, but on the other hand a car-factory sales manager not long ago declared that cars built by his company after war would continue to be produced with cast-iron pistons.

Changes are bound to come in post-war cars, but designers will not use new or comparatively new products simply for the thrill of using them. The materials will find a place in the new cars only when they can serve a desired end better than materials used previously and when the cost is comparable to that of more familiar materials.

Synthetic Output Rises, Tire Reports Brighten

IN the first announcement on the status of synthetic-rubber production since the Fourth Progress Report was issued last November, Rubber Director Bradley Dewey declared Jan. 12 that the output of synthetic plants in the fourth 1943 quarter ran somewhat ahead of the estimate made in the earlier report.

The total of all synthetic rubber produced in the last 1943 quarter was 124,219 long tons, or nearly 1000 tons in excess of the estimate. Of this, 105,711 long tons were Buna-S, the type used for tires. This was 711 long tons above the estimate that was made last year.

While the success of the synthetic program has long been insured, and pessimism near the year end was based solely on the lack of tire-building facilities, it is reassuring to know that the program is keeping so close to schedule.

It is even more encouraging to learn from field tests conducted by the Army and many civilian groups that the performance of synthetic rubber tires is constantly improving. Mileages of 10,000 miles and more in ordinary driving are reported for passenger-car sizes, and even in truck sizes synthetic is standing up better than seemed likely when they were first used. Conclusive tests of truck tires are still to be made.

Kaiser's New Company Stirs Talk of \$400 Car

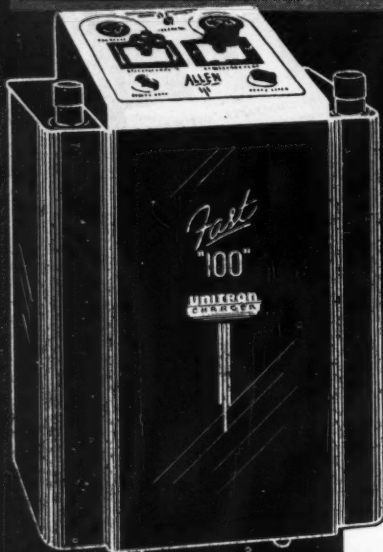
ATTENTION has been drawn again to the announced intention of Henry J. Kaiser to produce a \$400 post-war passenger car by the formation of the Michigan Kaiser Co. with a capitalization of \$50,000. This company, of course, is not going to build civilian cars now and probably not after the war, for the day is long past when such meager capital could launch a new automobile. Rather, the company seems to be concerned with the light military vehicle in which Kaiser is understood to be trying to interest the Army.

If the military job goes into production, the company could easily turn to the post-war production of civilian cars, for it would undoubtedly have plant facilities available, especially since Kaiser is depending upon 52 suppliers for the military car, and might be inclined to pursue a similar course with a car to be built in peacetime.

However, the construction of a new automobile is a comparatively easy matter. The real problem is merchandising, which takes ample capital, a financially responsible and capable dealer organization, and a product with popular appeal. Low

(Continued on page 66)

BUY ALLEN NOW! NO PRIORITY REQUIRED



HELP YOUR CUSTOMERS

keep their vital cars and trucks rolling — by turning out BETTER JOBS in less time with Allen Equipment. See your jobber or write us about your present requirements.

The War Production Board is permitting Allen distributors to purchase, for their stock, Allen Equipment as listed below.

This enables the jobber to supply you now with any of these products — and you DO NOT need a priority rating.

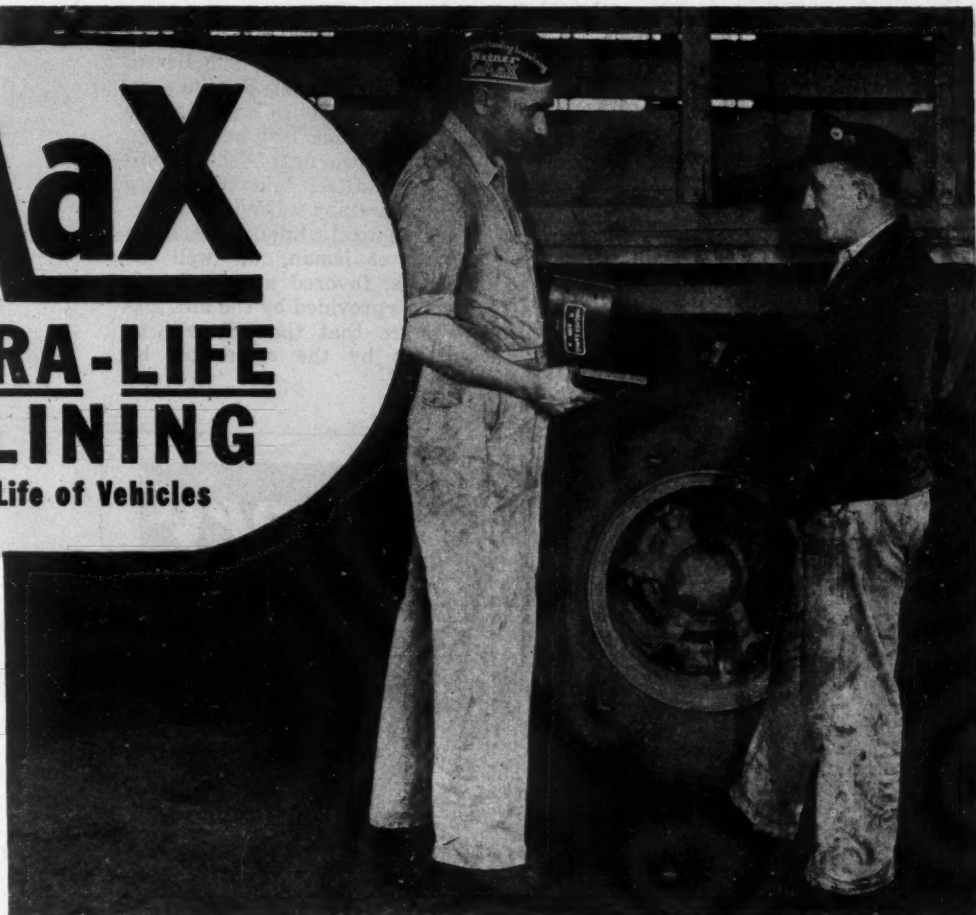
1. Battery Chargers—(Fast and Wall Types)
2. Gauges—(Compression and Vacuum)
3. Growlers—(Armature)
4. Synchrographs—(Distributor Testers)
5. Test Stands—(Generator, Starter and Magneto)
6. Tune-up Testers—(Coil, Condenser, Volt-Amp, Tachometer and Contact Angle)
7. Timing Lights and Cell Testers
8. Puller Presses and Radiator Test Plugs
9. Undercutters and Magnetizers
10. Welders—(Arc and Spot)

ALLEN Equipment
ALLEN ELECTRIC & EQUIPMENT CO.
KALAMAZOO, MICH.

CoMaX

THE EXTRA-LIFE BRAKE LINING

Wears Longer... Guards Life of Vehicles



WAGNER
Automotive Products Include:

- LOCKHEED**
HYDRAULIC BRAKE FLUID
- LOCKHEED**
HYDRAULIC BRAKE PARTS
- CoMaX**
BRAKE LINING
- WAGNER**
AIR BRAKES
- TACHOGRAPH**
(Recording Speedometer)

It is no wonder that Wagner CoMaX Brake Lining is the *first choice* of so many persons who speak from experience.

They know, as you know, that good, dependable brakes are essential to conserve the period of usefulness of vehicles which must last for the "duration"—and CoMaX can't be beat for quick, safe, smooth stops.

There is no job too tough for CoMaX, and you can perform a real service towards keeping automotive transportation rolling safely—by recommending that old, wornout linings be replaced with CoMaX Brake Lining.



CoMaX is produced in rolls, sets, blocks and slabs. For details, consult your nearest Wagner jobber, or write us.

B44-2

Wagner Electric Corporation

ESTABLISHED 1891

6498 Plymouth Avenue, St. Louis, 14, Mo., U. S. A.
AUTOMOTIVE AND ELECTRICAL PRODUCTS

For Victory—Buy U.S. War Bonds and Stamps

When writing to advertisers please mention Motor Age

Kaiser's \$400 Car

(Continued from page 64)

price is not the complete answer, as other small-car makers have found, and no one knows how much car it will be possible to build for a given sum under post-war conditions.

Retailers Endorse Aims Of Surplus Goods Bill

CHANCES that House Bill 3873, which provides machinery for the fair and orderly disposal of sur-

plus war materials, would be acted upon favorably by the House were improved measurably, it is believed, by testimony offered at hearings on the bill before the House Banking and Currency Committee last month.

Chairman Patman, of the Small Business Committee, told the group that Undersecretary of War Patterson and Admiral Land, Maritime Commission chairman, as well as other officials, favored a central policy agency, as provided by the bill. Expectations are that the bill will be reported out by the committee by Feb. 15.



"I get the best results these days by just using gasoline. When men smell it, they think I've got a C book."

David R. Craig, president of the American Retail Federation, testified that the bill, when submitted to a referendum of all members of the federation, including 30 state associations, had been unanimously approved. However, Craig did point out that one section of the bill provided that "the prices at which any particular property or class of property is sold or leased should be uniform," while another section prescribes advertising for competitive bids. He recommended that competitive bidding be required.

Arthur E. Summerfield, chairman of the Post-War Planning Committee of the NADA, endorsed the bill and praised the handling of dealer relations by the RFC, which, under the bill, would supervise the disposal of surplus war goods. Summerfield pledged the cooperation of dealers with government officials in accomplishing the ends sought by the bill. While many details must necessarily be clarified before the bill becomes law, its intent deserves dealer support.

Car Factories Lay Plans For Post-War Production

FOR the first time since production was suspended, motor-car companies are talking seriously of post-war plans.

C. L. McCuen, vice-president and chief engineer of General Motors, told the United Press that the corporation "could be functioning on automobiles within an hour" after the war ended.

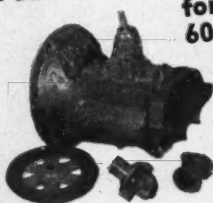
Declaring that all "the paper work is behind us," McCuen asserted that the first cars to be built by General

(Continued on page 68)

Immediate Delivery

REBUILT & GUARANTEED HEAVY DUTY TRANSMISSIONS

for FORD V-8 60 HP. 37-39



GUARANTEED to OUTLAST the CAR! Will fit without any alterations. Has the 85 HP. Straight Cut Gears! All Worn Parts Replaced. Ready to Install—Fits Perfectly—Nothing Else to Buy!

Included Are:—Clutch Plate, Universal Joint and Throwout Bearing.
MA-200 -- \$27.50
Outright, Ea. \$25.00
Lots of 3, ea. \$20.00
MA-201—SAME WITH HELICAL CUT GEARS
Outright ..\$37.50
Exchange, Ea. \$20.00
Lots of 3 Ex..Ea.\$20.00
Exchange..\$32.50

For exchange price, send prepaid old transmission, clutch plate, universal joint. Your case must not be broken.

DELCO-REMY GENERATORS



Regular Line Guaranteed 90 Days
MA-090-Ea. \$2.94

Lots of 3, \$2.85 ea.

Our GOLD BAND DELUXE REBUILT GENERATORS Are Guaranteed 6 Months

They are dismantled, completely overhauled with all worn parts replaced.

Chev., 1927-33 and 34-36 Std.

Will also fit other cars:

Ply., 31-33,

Pontiac 30-33,

Dodge 6 cyl. 31-33,

De Soto 30-33 and

some Chryslers and others

GOLD BAND DELUXE Guaranteed 6 Months
MA-D-090—Each ...\$3.94

Lots of 3, ea. \$3.85
Lots of 6, ea. \$3.75
Lots of 25, ea. \$3.35

CHEVROLET & G.M.C. EXTRA HEAVY DUTY Rebuilt and Guaranteed—3 SPEED TRUCK TRANSMISSIONS



1937-42 Incl.
1/2, 3/4 & 1 Ton Models
Complete with Universal Joints and all necessary fittings. This is a standard Transmission for which we can supply all the gears and other parts. They come complete with Shifting Lever and fit perfectly. You have to make one slight change—cut your floor board 1" larger. Your these Transmissions.

Emergency Lever fits
MA-500—Chev. 37—1/2 ton
MA-501—GMC—37—1/2 ton
MA-502—Chev. 38-39—1/2 ton
MA-503—GMC—1938-39—1/2 ton
MA-504—Chev. 1940-41 and 42—1/2 ton
MA-505—GMC—1940-41 and 42—1/2 ton
MA-506—Chev. 1938—3/4 and 1 ton
MA-507—GMC—1937—3/4 to 1 ton
MA-508—Chev. — 1938 to 41—3/4 to 1 ton
MA-509—GMC—1938-42—3/4 to 1 ton

\$32.50 each

\$29.50 each in lots of 3

\$27.50 each in lots of 6

We will allow you \$10.00 on your old Transmission if case is not cracked. \$5.00 if case is cracked.

Old parts must be shipped in Prepaid.

1936-39 Ford Used Steel WHEELS

Guaranteed to be true and in perfect condition.



MA-D29U-1 Each. \$2.10

Lots of \$1.95 6, Each

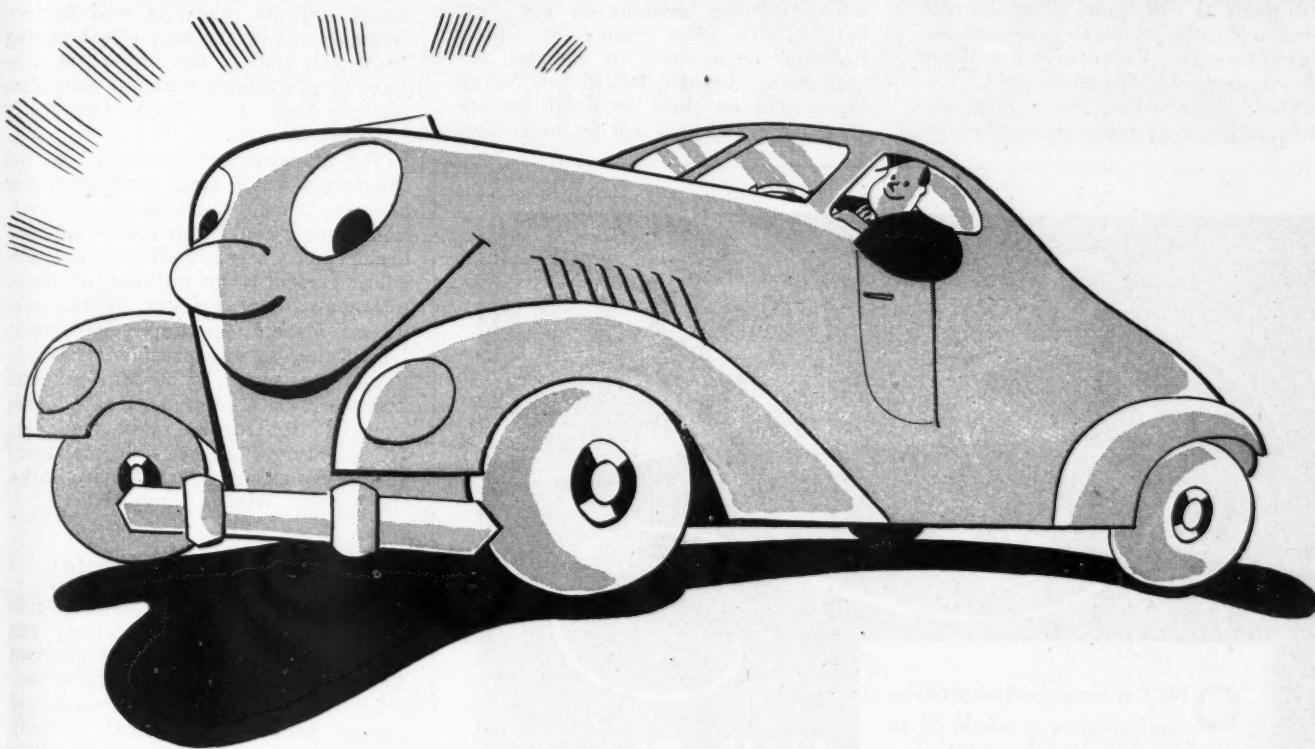
'39-'42 Chevrolet Rebuilt SHOCK ABSORBERS

Guaranteed MA27-6 —Front } \$6.54 ea.
in perfect MA27-7 —Rear }

The Original
WARSHAWSKY & CO.
1900-24 So. STATE ST. - CHICAGO 16, ILL. - TELEPHONE CALUMET 6800

Write for Our Circulars and Catalog Showing Our Complete Line of Auto and Truck Parts

It won't be long now!

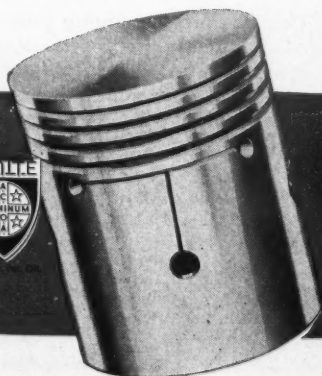


You can credit that smile to the prospect of a real overhaul job for an engine which long ago passed the "please restore my youthful pep" stage. Of course that will include new Lynite* LO-EX Pistons.

When the repair shops can take care of the thousands of cars needing this kind of service, depends on how the war progresses. It's largely a question of man power.

Remember that Lynite LO-EX Pistons provide superior performance, longer engine life and added economy. They have low coefficient of expansion, give maximum heat flow, permit close clearances. Oil and gas consumption and carbon formation are held to a minimum. ALUMINUM COMPANY OF AMERICA, 2133 Gulf Building, Pittsburgh, Pennsylvania.

*Lynite and LO-EX are registered trademarks of Aluminum Company of America.



LYNITE LO-EX PISTONS. A PRODUCT OF
ALCOA ALUMINUM

Post-War Production

(Continued from page 66)

Motors after the war would cost at least 20 per cent more than their pre-war counterpart.

Nash, which announced some time ago that its plants were ready for resumption of peacetime car production, will push its 600 model after the war. George W. Mason, Nash president, declared recently. Reconversion will cost the company \$6,000,000 he said.

These declarations are a long way from actual resumption of car produc-

tion, but they do indicate that war production is no longer monopolizing the thinking of car manufacturers.

Spray Painting School

With automotive refinishers everywhere bucking the handicaps of "too much work and not enough men," the DeVilbiss Co., Toledo, Ohio, has just announced that it will hold two one-week training sessions in the first half of its 1944 School of Spray Painting to be held in Toledo. All applicants using DeVilbiss Spray Equipment on their jobs will be admitted free to the session beginning

March 13 or the one beginning June 12.

Instruction will be conducted by spray-painting experts. Those interested should write the DeVilbiss Co., Toledo 1, Ohio, for further information and reservations.

Regional Managers Meet

Advanced engineering developments which will be ready to still further Ramco's aid in the war effort during 1944 was one of the important subjects of the Ramco regional managers meeting held in St. Louis Dec. 27 to 29, 1943.

The management reported that the company's 1943 ring production for civilian, transport, military and aviation requirements reached an all-time high which exceeded all previous production records by millions of rings.

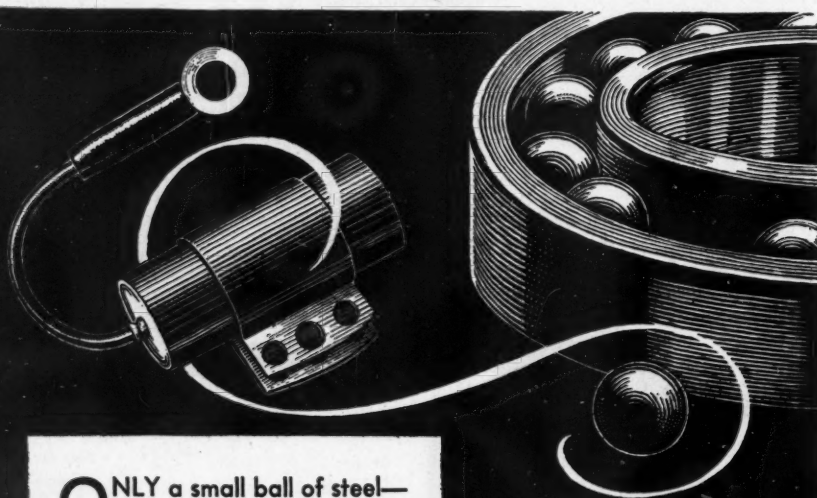
Among those present at the conference were J. A. Ramsey, president; Lee Ramsey, vice-president; H. A. Ramel, treasurer; C. A. Marien, chief engineer; O. C. Holaday, sales manager; T. R. Dubois, plant manager; W. G. Myers, advertising manager; and Regional Managers, Morin, Parks, Marien, Jr., Atkins, Tapp, Herr.

Body and Fender Tools

With replacements extremely difficult or impossible to get, body and fender-repair tools play an important role today. New Britain has a complete line of such tools, numbered among which are several general-purpose spoons. These are hammer-forged from alloy spring steel, correctly tempered with forking faces ground and full polished. A good example is the Long Turret Top Spoon, No. SP-11, illustrated here. This is a strong, rugged tool, planned to withstand severe usage. It may be used for driving, as a pry, or as an offset dolly for dinging. End of blade has medium calking face. It weighs 3½ lb., has a 1½ in. x 5¼ in. x 3/16 in. face, with 1½ in. handle and overall length of 10 in. A rating of AA-5 or higher is required for the purchase of this tool. Manufactured by New Britain Machine Co., New Britain, Conn.

Starter-Generator Press

Tough, time-consuming jobs are performed quickly and without damage to starter and generator parts with the Trucut Press and attachment. Removes pulleys and gears, expands pole-shoe pieces, extracts stubborn pole-shoe screws, straightens shafts, and removes bushings from closed end plates. Also has many other general-purpose uses. Generators can be driven by a belt while clamped in V-block vise. You can build a generator test bench around this unit. Sold by Sales Division, Frank N. Wood Co., Box 67, Wauwatosa, Wisconsin.



ONLY a small ball of steel—but it does a whale of a job. As a part of the ball bearing assembly it makes volume production possible at high speeds. Failure of a single ball would halt the operation of an entire mechanical unit.

In the Ignition System of every motor vehicle a small part, the Condenser, does a job that is just as big. If the Condenser breaks down the entire Ignition System fails, and the car or truck stops dead.

Replace with Blue Streak Condensers and give the Ignition System the "protection" of a time-tested part—a product you know you can rely upon.

STANDARD MOTOR PRODUCTS, INC.

37-32 Northern Blvd., Long Island City, N. Y.

Little Things
that do
**A BIG
JOB**



For "Long-Life Peak Performance" use Blue Streak Ignition Parts

Your present **PLAN** for future **SALES**

In planning your business of tomorrow, by all means look into the Exide proposition. Here is a field-tested, time-proven merchandising set-up... built around service stations... to sell more batteries and battery service with minimum effort and with satisfactory profits.

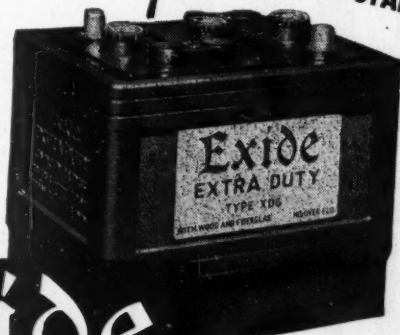
Furthermore, postwar demand for quality batteries is being strengthened right now by these two effective Exide wartime promotions: the Exide Periodic Recharge Program is saving thousands of badly-needed batteries, and the Exide Sure-Start Service is keeping millions of cars rolling. Both campaigns can mean greater postwar profits to you... if you take advantage of Exide experience in your field. Write today.

THE ELECTRIC STORAGE BATTERY CO.
Philadelphia 32

Exide Batteries of Canada, Limited, Toronto



Exide
BATTERIES



Exide **MERCHANDISING PLAN**

To sell more batteries, with minimum effort
... at satisfactory profits ...

Exide QUALITY... Exide Batteries have long been known for their long life, complete dependability and ease of maintenance.

Exide ADVERTISING... is building ready-made public acceptance. The Exide Authorized Dealer's sign adds prestige to any service station.

Exide MERCHANDISING... is tailor-made precisely for the service station. Helps sell other services and accessories, too.

Exide EXPERIENCE... Proper storage technique as well as sales and merchandising problems competently covered by experienced Exide representatives.

Exide COMPLETE LINE... No lost business for the Exide dealer. There is an Exide Battery for every job.

Exide PROFITS... Exide's "BUY TO LAST" campaign has helped trade up battery purchases. The better the battery, the more profit in every sale and the better satisfaction to the car-owner.

Exide SURE-START SERVICE... keeps millions of cars rolling, and builds appreciation of quality in batteries.

Exide POINT-OF-SALE... Complete material is supplied to all dealers.

**WHEN IT'S AN
Exide
YOU START**

MEMA Elects Anderson To Serve Another Term

General Manager Eichholz announces that, at the January meeting of the board of directors of the Motor and Equipment Manufacturers Association, the following officers were elected for the current year:

President, John W. Anderson, The Anderson Co., Gary, Ind.; vice president, John M. Spangler, National Carbon Co., New York, N. Y.; secretary, A. B. Bussmann, Bussmann Manufacturing Co., St. Louis, Mo.; treasurer, Clyde P. Brewster, K-D

Manufacturing Co., Lancaster, Pa. Anderson and Brewster served in 1942 and 1943.

The following were elected members of the executive committee: President Anderson, Vice President Spangler, Treasurer Brewster, E. J. Wilcox, J. H. Williams & Co., Buffalo, N. Y., and Will Dammann, Bear Manufacturing Co., Rock Island, Ill. The following were elected as members of the Finance Committee: President Anderson, Vice President Spangler, and Fred G. Wacker, Automotive Maintenance Machinery Co., North Chicago, Ill.

The Name Is Grant



Richard H. Grant

is the automobile executive described on Page 35. He retired last month as vice-president of the General Motors Corp. but continues as a member of the board.

The farm electric-light-plant company was Delco. Grant became general sales manager of the Chevrolet Division in 1924 and, while he was directing sales, Chevrolet rose to top position among passenger cars.

David W. Rodger

An outstanding figure in the automotive service industry passed with the death in Detroit, Jan. 4, of David W. Rodger, vice president and secretary of the Federal-Mogul Corp., manufacturers of sleeve bearings, bushings and other automotive parts.

Rodger, who had been associated with Federal-Mogul since 1915, for many years was an active national figure in promoting and improving the automotive service industry.

A member of the Society of Automotive Engineers, he was a past president of the National Standard Parts Association and formerly was an officer of the Automotive Parts & Equipment Manufacturers' Association. He was also a past president of Automotive Boosters' Club No. 19, of Detroit. Recently he had been elected a director of the Automotive Council for War Production.

He had been in ill health for several years.

Appointed Sales Aide

Young Radiator Co., manufacturer of heat-transfer products for building, aircraft, automotive, marine, industrial, transportation and related fields, announces the appointment of the W. P. Nevins Co. as sales and engineering representatives in the Chicago territory.

Invasion needs
come FIRST

It takes thousands of vehicles of all kinds to smash the Axis on all fronts! These vehicles need MUFFLERS—and AP and Subsidiary today are making more mufflers than ever before to help meet our army's demand. This is taking part of our supply for civilian replacements—which may mean delays or limited shipments to our good customers. We're sorry when we must disappoint you—but the needs of Victory come first! The AP Parts Corporation, Toledo, Ohio.

CUT DOWN B.P.
(BACK PRESSURE)

with
AP

MILEAGE GETTING
MUFFLERS



A Thermoid Fan Belt was removed from a Buick, and the weight of a horse suspended from it. When put back on the car, the belt performed perfectly at the same adjustment! That's convincing proof of the advantages of Thermodized Pre-Stretching.

HERE'S A HORSE OF A DIFFERENT COLOR

Legally Speaking

A lawyer's interpretation of federal and local court decisions of interest to repairmen, presented each month

By C. R. ROSENBERG, JR.

Tricks with Notes

Repairmen taking a customer's note for an account often ask the customer to get a financially responsible person to endorse the note. If the note

is not paid at maturity, the repairman will lose his right to collect from the endorser unless he takes certain formal steps required by law.

"Notice of the non-payment of the note," said a New York court re-

cently, "must come from the one who is entitled to look to the endorser for payment and must inform the endorser that the note has been duly presented for payment, that it has been dishonored and that the holder looks to the endorser for payment." (*In re Taylor*, 21 New York Supplement, second series, 245).

Even though the endorser actually knows the note has been dishonored, the notice described by the court must be given to him anyhow. If it is not given, the endorser is "discharged" of his liability to pay the note.

To avoid this hazard, some repairmen require that the customers' financially responsible friend sign the note as co-maker with the customer and not as endorser. Once he signs as a co-maker, he is "primarily liable" to pay the note without any further formality.

If he insists that he will sign as endorser or not at all, the responsibility of giving the "notice" described by the court may be avoided by having him endorse a note containing a so-called "waiver of presentment and notice of dishonor." Printed forms of notes containing such a waiver may usually be obtained from a bank or business stationer.

Partnership Management

One of the disadvantages of partnership organization of a business is that each partner is by law entitled to his "say" in the management of the partnership business. Where several partners have different ideas, it is all too easy for partnership wrangles to wreck the business. What to do?

A Texas court suggests a solution: "Every partner is entitled to take part in the management of the business. But the management of the business and the extent of the control of particular matters are proper subjects for arrangement by the partners. Thus one or more partners may be given exclusive control over the management of the entire partnership business. Among themselves, partners may vest the sole management in one or more partners, the others working under his direction." (*Carpenter vs. Bass*, 142 Southwestern Reporter, second series 406).

Agents on Commission

Repairmen may employ selling agents on commission without worry about legal or tax involvements, if a recent New York decision is followed in other states.

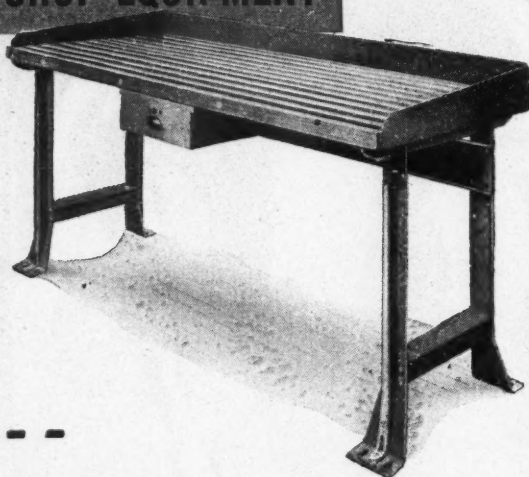
The New York case arose out of a claim by a woman for unemployment-insurance benefits. If she had been an employee, she would be entitled to them; but, if she were a so-called independent contractor, she

(Continued on page 76)



A corner of a modern service shop with "Hallowell" Work-Benches adapted for valve work.

Below — Fig. 928. Pat'd and Pats. Pending. Drawer is extra.



For
adding to
your shop
facilities
Quickly - - -

specify "HALLOWELL" Work-Benches

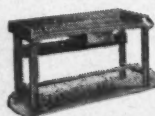
You can choose the work-benches that best fit your needs from 1367 "Hallowell" ready-made bench combinations. Sturdy leg construction

assures their standing firm and rigid without costly bolting to the floor. They are easily moved, and any number can be joined end to end for a long continuous bench.

For use where steel is war-restricted, we are now making "Hallowell" Duration Type Work-Benches of Wood.

Detailed information gladly sent upon request.

"HALLOWELL" Wood Work-Bench



Duration Type

Fig. 1969

Drawer is extra

OVER 40 YEARS IN BUSINESS

STANDARD PRESSED STEEL CO.

JENKINTOWN, PENNA. BOX 561

— BRANCHES —

BOSTON • DETROIT • INDIANAPOLIS • CHICAGO • ST. LOUIS • SAN FRANCISCO



WHEN JOHNNY COMES ROLLING HOME AGAIN

Thousands of trained mechanics will come back, ready to pitch in and help the over-worked repair shops. The Army teaches these men how to do a job right, and part of their training is in the use of Lanagan Testing Equipment. There is no place for hit or miss trouble-shooting in the Army and there will be no place for these methods in post-war shops, either.

Lanagan Generator Test Benches, Mica Undercutters, Distributographs, Growlers, and other accurate testing devices are going to mean faster, more dependable work in thousands of shops after the war—the kind that attracts business and keeps it. Include Lanagan in your post-war drive for business. Our current catalog will help you plan.

BONDS NOW WILL GIVE YOU BUYING POWER LATER



LANAGAN AND HOKE

431 E. COLLOM STREET, PHILADELPHIA 44, PA.

PRECISION AUTOMOTIVE TESTING EQUIPMENT

FEBRUARY, 1944

When writing to advertisers please mention Motor Age

Legally Speaking

(Continued from page 74)

would not. She had been selling on a commission basis for a business house.

"She was permitted to work anywhere she pleased," said the New York court in describing her work. "She was not required to spend any specific number of hours, and there was no check-up on her time. She might use any sales method she pleased. She paid her own expenses, had no drawing account, was fur-

nished no office space and was not required to work exclusively for this one business house. She made no written reports and was not required to keep any record of her activities. There was no supervision or control over her such as is usual in the case of an employee. The Federal Bureau of Internal Revenue decided that similar commission sales agents were independent contractors."

Where, as the court found in this case, the worker is an independent contractor and not an employee, the "employer" pays no social-security tax and no employment compensation or insurance tax on such person.

Moreover, he is not legally liable for any damage done by such person in the course of his or her work—as he is in the case of an employee. (*In re Binder*, 21 New York Supplement, second series, 369).

Those "Unfair" Signs

The picketing of business establishments with "unfair" placards has become such a familiar technique in labor disputes that most business men have concluded that they either must make peace with the picketing union or endure the "unfair" signs.

A repairman who is unfair to organized labor has no redress against a union which pickets his place with placards to that effect. But where the placards *untruthfully* accuse him of being "unfair," the placards are libelous and the responsible union may be sued for libel.

Such at least is the view expressed in a recent opinion of the United States District Court for the District of Columbia.

"Labor organizations," says the court, "should and do have a right peaceably to give publicity to labor disputes in which they are interested. This right to publicize the facts concerning a labor dispute carries with it an obligation of self-restraint to prevent the publication of untruth."

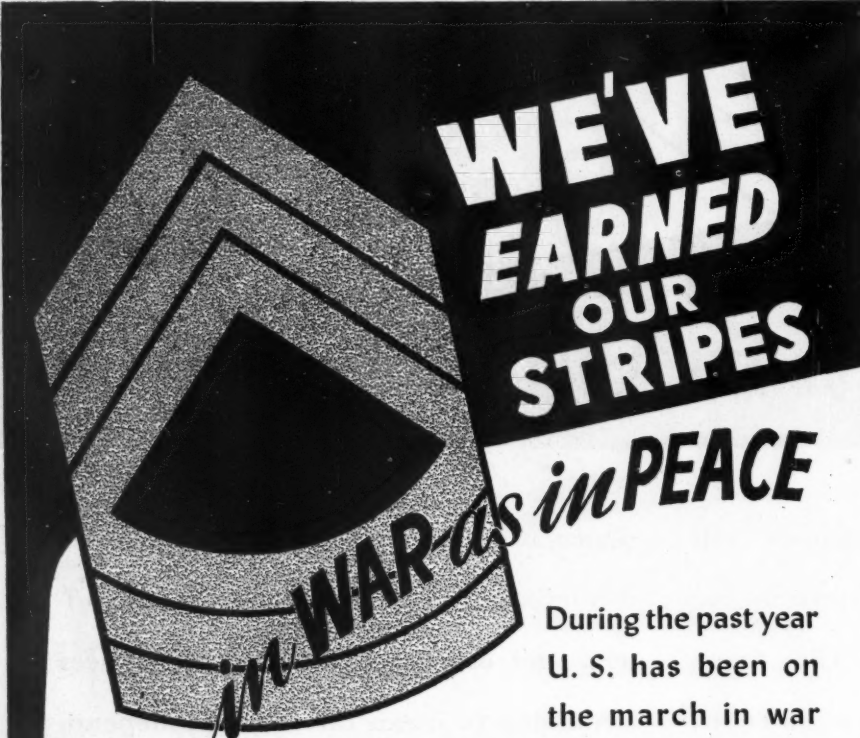
"It cannot be doubted that the publication of a statement to the effect that a person or corporation, engaged in selling to the public, is unfair to organized labor, if in truth and in fact such person or corporation is not unfair to organized labor, results in inevitable damage and loss to that person or corporation. Such a statement, if false and malicious, can be assimilated to those expressions well recognized in the law to be libelous in themselves. To contend otherwise is to ignore the realities of present-day economic life." (*Consolidated vs. Drivers, Local Union*, 33 Federal Supplement 645).

Employee Competition

An employee's knowledge of his employer's business may easily become a weapon wielded against the employer's interest.

"One who leaves the employment of another has the right to take with him all the skill acquired and all the information he has received, so long as he takes nothing that is the property of the employer," said a federal court recently. "If the employee takes nothing belonging to his employer, he is free to act."

Perhaps he may "act" by setting up in competition with his former employer. Some employers protect themselves against this possibility by requiring employees to sign agreements not to engage in the same line of business within a designated territory or within a specified time after leaving the employer's service. (*Activated Sludge vs. Sanitary District*, 33 Federal Supplement, 692).



WE'VE EARNED OUR STRIPES
in WAR as in PEACE

During the past year U. S. has been on the march in war work, producing material for the firing line consequently this has necessitated our marking time in the automotive field. • U. S. has truly earned their stripes in war as well as in peace, merited in both instances by modern engineering, precision work and real manufacturing facilities. • Look for U. S. to pace the field when peace is declared — there will be something new and modern in air compressors, hydraulic lifts and lubricating equipment.

U.S.

AIR COMPRESSOR CO.
5300 HARVARD AVENUE
CLEVELAND, OHIO
AIR COMPRESSORS • HYDRAULIC LIFTS
• • LUBRICATING EQUIPMENT • •

... IN ENGINEERING ... IN MANUFACTURE ...



Quality HAS MADE TOLEDO MOTOR AND
CHASSIS PARTS THE CHOICE OF
AMERICA'S MEN WHO KNOW MOTORS

And in the conservation of vital motor and chassis parts, your skill, your sound automotive knowledge, enables you to prolong their life . . . giving extra service—extra miles to cars you repair. Chances are, when you do install new parts, you are wisely specifying Toledo—for the extra measure of quality—the plus miles they add to a car's life.

The amazing performance records of Toledo Motor and Chassis Parts attest to their quality—in materials, in engineering, in manufacture, in dependable service.

The **TOLEDO**

STEEL PRODUCTS COMPANY

TOLEDO, OHIO • U. S. A.

SINCE 1906

Makers of Fine Automotive and Aircraft Parts



Tire Repair Ceilings

(Continued from page 40)

of ceiling prices, which previously had been determined by the "freeze" price or through use of a formula. Materials cover tire-repair cushion stock, tread repair stock, tube repair gum, vulcanizing cement, and cold cure cement.

Time Limit Removed

THE time limit on the use of AA-1 ratings on replacement parts for medium and heavy trucks, truck

trailers, buses and off-the-highway motor vehicles, recently set for April 1, has been removed by the WPB. Manufacturers are thus enabled to schedule production for the second and subsequent quarters of the year on an AA-1 priority basis.

Recent Rulings

STORAGE TANKS. When underground gasoline or fuel tanks are sold, the seller may be compensated for a portion of the original installation cost, when that cost was in excess of \$100, the OPA has announced. The

amount of such installation cost will be depreciated at the rate of 5 per cent a year for the time elapsing since the tanks were installed.

* * *

LOST GASOLINE. Unavoidable losses of gasoline may now be recovered by trucking companies, farmers, and other bulk users of gasoline, the OPA has ruled. The losses covered include fire, theft, and similar occurrences. The consumer affected must apply for replenishment of his supply to the ration board that issued the ration originally.

* * *

GAS RATIONS. Members of the armed services recuperating from illness or wounds received while on active service may obtain special gas rations for use in traveling to and from their homes or other places of convalescence.

* * *

WHEELS. In a special interpretation covering Limitation Order L-158, which lists the automotive replacement parts that may be produced, the WPB has explained that the term "wheels" used in the order does not include hub caps, wheel caps, and wheel trim rings which serve only as decoration. Hub caps which serve as grease retainers may be considered components of wheels and may therefore be produced.

* * *

TRUCK GAS. Purchasers of commercial vehicles, to obtain gasoline rations, must turn over to the local rationing board a receipt for the ration coupons outstanding on the vehicle at the time of its sale. The seller must surrender the coupons to either the ODT or the local ration board, which will then issue a receipt to be turned over by the seller to the purchaser.

* * *

INDUSTRIAL TIRES. Industrial-type tires of specified sizes have been removed from rationing, the OPA announced last month. The sizes affected are all tire sizes up to and including 4.50-12, 6.00-9, 7.50-10, 7.50-15 (four-ply smooth-tread only), and 9.100-10. Tubes designed for use within these tires also are ration-free. When such tires and tubes are bought for use on vehicles, they remain subject to rationing regulations.

* * *

TRUCK TIRES. Hereafter, truck and bus operators who are unable to obtain tire certificates from their local War Price and Rationing Boards because local quotas of tires have been exhausted will report the fact to the ODT, which will use the information to determine possible action to assist applicants. Operators are reminded by the ODT that the truck-tire situation is likely to remain serious for some time.

(Continued on page 81)

Motor Service Men Too

*Pass the
Ammunition*

From crossroads to cities Motor Service Men are making mighty contributions for Victory in this mechanized, global War.

In the face of countless difficulties — shortage of men, equipment, parts — they are keeping the millions of cars, trucks, trailers and buses fit for dependable and safe operation.

GATKE takes pride in providing these important aids to the achievements of Motor Service Men —

GATKE **CUSTOM-BILT** Brake Lining Sets engineered and service proved for each Make, Year and Model that assure dependable operation and avoid time-consuming adjustments—Give smooth, non-grabbing action that saves tires, prolongs drum life, and affords extra miles of service with safety.

GATKE Drilled Sets, available for more than 90% of vehicles, save application time.

Tell-All Labels on GATKE Cartons give Make, Year and Models the set fits for quick, positive identification.

GATKE Simplified Catalogs make it easy to select the proper set quickly.

Ask your GATKE Jobber about the many other features that help you render better service quicker.



**GATKE
Heavy Duty
Brake Block**



Look at the complete information listed on GATKE Tell-All Labels.

Gatke
CUSTOM-BILT

BRAKE LININGS

BLOCKS SETS ROLLS SHEETS

GATKE CORPORATION 228 N. La Salle
Chicago 1, Ill.



"I wasn't insinuating you were dull company, Gus, when I told you to go bore the cylinders!"

Recent Rulings

(Continued from page 78)

R COUPONS. If a plan now being tested in Georgia and Florida succeeds, gas stations throughout the country may be prohibited from accepting "R" gasoline coupons. These coupons, issued for fuel for non-highway, could be redeemed only by dealers with delivery facilities and who regularly make deliveries in lots of 25 gal. or more. Stations could still accept "E" non-highway coupons.

* * *

RETREAD EQUIPMENT. Applications for tire retreading, recapping, or repair equipment, exceeding \$85 in retail value, must now be filed with field offices of the WPB, instead of with the Office of Rubber Director. Exceptions are full-circle molds and matrices for recapping airplane, earth mover, road grader, or rear-wheel tractor tires, for which applications should be forwarded to the Office of the Rubber Director at Washington, D. C.

* * *

ANTI-FREEZE CONTAINERS. Order L-307, which prohibited the use of new containers of less than 5-gal. capacity for packaging anti-freeze mixtures other than the ethylene-glycol type has been revoked. It is now permissible to use glass containers of more than 140 fluid oz. for any type of anti-freeze and metal containers of 1 gal. and over for ethylene glycol anti-freeze.

Becomes Sales Chief

The McKay Co., Pittsburgh and York, Pa., recently promoted Fred C. Smith, with the company since 1927, to the post of general sales manager of all divisions of products. Smith's advancement with the company has

been steady, he having occupied successively the positions of statistician, sales correspondent, sales promotion manager, assistant sales manager in the past 17 years. Born in 1904, Smith was educated in Pittsburgh, graduating from Carnegie Institute of Technology in 1925 with an engineering degree. Two years later a masters degree in economics was conferred upon him by the University of Pittsburgh.

Cable Firm Incorporated

Milton C. Sapinsley announces the formation of a new corporation, The

Crescent Co., Inc., to take over the automotive, marine and aviation wire and cable business formerly conducted by him as an individual under the name of The Crescent Co., Pawtucket, R. I.

The original business was founded in 1925. The new corporation came into operation Jan. 1, 1944.

Officers of the new corporation are: Milton C. Sapinsley, president and treasurer; James T. Birch, vice president in charge of sales; William A. Demers, vice president in charge of factory operations, and Arnold R. Dahlstrom, vice president in charge of production and cost control.

Replacement BEARINGS

AVAILABLE Now

—yes Ahlberg Ground Bearings are now available in many popular sizes. Here's how!! Take the worn Ball Bearings that need replacement to your jobber and he will sell you Ahlberg reconditioned ball bearings that carry a new bearing guarantee.

If you want the complete story on how Ahlberg Ground Bearings are reprocessed send for new "AGB Book."



WRITE FOR THIS BOOK

AHLBERG BEARING COMPANY
Manufacturers of (G.B.) Master Ball Bearings
★ 3028 WEST 47th STREET • CHICAGO, ILL. ★

Detroit Dealers Name Hacquoil 1944 President

Sen. Homer Ferguson, Michigan member of the Senate Truman Committee, believes that post-war stocks of excess military materials should be disposed of in an orderly way without disrupting civilian markets.

"I can say for myself that I unqualifiedly will insist that the rights of established trades, professions and occupations must not be ignored when the policies of disposal of government stocks is being determined," he told the annual meeting of the Detroit Auto Dealers Association. He said

the Truman Committee report on re-conversion suggested the formation of a Surplus Commodities Corp. by the government or the disposal of excess stocks through the government procurement agencies.

The Michigan senator praised the dealers for their war-service job and cited the fact that more than 80 per cent of them are still in business after 25 months of war.

Clarence J. Hacquoil, Detroit Buick dealer, was elected president of the association for 1944, succeeding Webb Kay. Other officers are Jack Rose, vice president; David Barnett, secretary, and Don Homer, treasurer.

Other members of the board of directors are Henry Whiting, Ed Roney, Gil Schaefer, Pat O'Dea, Charles Dalgleish, Woody Shikany and Art Shores.

30 Years a Jobber

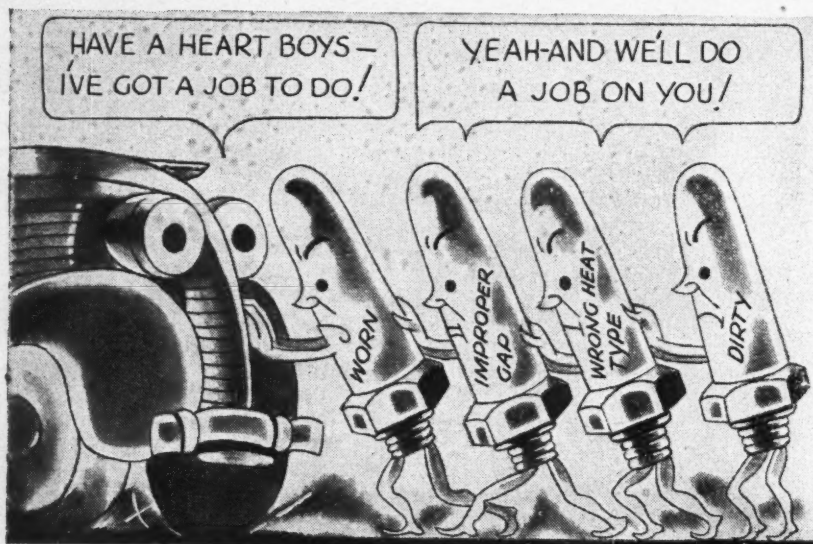
On Feb. 9, George L. Fischer will mark the 30th year with J. H. McCullough & Son, Philadelphia automotive jobber.

Fischer, who is widely known in the eastern Pennsylvania and southern New Jersey area, has been general manager of the firm for 15 years.

He entered the automotive parts and supply business in 1906, when the trade was in its infancy. Numbered among his friends are many of the industry's pioneer figures.



George L. Fischer



DRIVING WITH FAULTY PLUGS IS "MECHANICAL TREASON"!

Car owners don't always realize how much faulty plugs cut down a motor's performance and how much precious gas they waste. But you know—and you can tell them! Suggest checking spark plugs on every service job—and when new plugs are needed, install Edison's. They fire hot, get maximum power out of the fuel. The "greatest name in electricity" sells Edisons for you!



Edison

SPARK PLUGS

EDISON-SPLITDORF CORP., WEST ORANGE, N. J.

GM Promotes 2

Alfred P. Sloan, Jr., Chairman of General Motors, has announced the following appointments:

George Russell has been appointed assistant treasurer of the corporation, with headquarters in New York, and Roy E. Hammond has been appointed assistant comptroller, with headquarters in Detroit.

Russell has been a member of the staff of the Treasury Division in New York since he joined General Motors on August 15, 1927. Hammond first joined General Motors in 1916 at Pontiac, Mich., with what was then the Oakland Motor Car Co.

10th Plant Acquired

The National Battery Co., with general offices in St. Paul, has announced the acquisition of its tenth plant, located in Zanesville, Ohio. Leased from the city of Zanesville, the new plant has 90,000 sq. ft. of floor space, all of which will be devoted, for the duration, to the manufacture of batteries for Army and Navy use. The company's post-war plans provide for conversion of the plant to automotive battery production.

Assistant to President

Howard W. Jordan, president of the Pennsylvania Rubber Co., Jeannette, Pa., has announced the appointment of Gordon Groth as assistant to the president.

Groth comes to Pennsylvania from Carnegie-Illinois Steel Corp., Pittsburgh, where he served as contact engineer in the Structural and Plate Division.



A BIT OFF THE BEAM

We automotive guys must stay on the beam in car servicing. These service "frills" are fine if you have time . . . but, because batteries must last longer, a wartime service commandment should be, "I will not neglect to check my customer's battery." Then you will be the first to discover worn or failing batteries. Then you can replace with Gould, the battery that has earned public confidence through 45 years of unflinching service.

In this way you are helping your customer, and the sale of new Gould batteries will help you.

Would you like a simple, effective way to train new employees so that battery servicing will show a good profit? Just send for the Gould Guide to War-Time Battery Service and the Battery Service Manual. Address Gould Storage Battery Corporation, Saint Paul, Minnesota.

GOULD . . . The battery that is pre-sold through national advertising.



FOR EXCELLENCE IN STORAGE BATTERY PRODUCTION AT DEPEW PLANT

GOULD

Since 1898 THE BATTERY PICKED BY ENGINEERS



Plan to Save Tools

Designed to help assure maintenance of the nation's transportation facilities through preservation of the basically essential, and, in many instances, irreplaceable maintenance tools and equipment in dealers' service departments, a wartime tool-conservation program has just been inaugurated by the Chevrolet Motor Division of General Motors.

"The ever increasing demand for more and more service and repairs as cars and trucks grow older requires greater use than ever before of all service tools and equipment,"

said Ed Hedner, Chevrolet national director of service, in announcing the tool conservation program.

"Our tool conservation program encompasses instructions to dealers and mechanics on the proper use of all equipment, correction of abuses, overhauling, rebuilding, repairing, lubricating, adjusting, painting and inspection."

Charles H. Warner

Charles H. Warner, 71, co-inventor with his brother, Arthur P., of the automobile speedometer and one of the founders of Stewart-Warner Corp., died Jan. 6 at San Marino, Cal.

Lewis Chosen President By Washington Dealers

Robert L. Lewis was elected president of the Washington (D. C.) Automotive Trade Association at the annual meeting of the organization, held Jan. 17.

Joseph R. Trew was named first vice president, and Floyd D. Akers second vice president. L. S. Jullien was elected treasurer and Fred L. Haller, secretary.

Flame Baffle

Designed to eliminate exhaust hazards in transportation of gasoline, ammunition or explosive material of any kind are the new Flame Baffle and Spark Arrestor made by Maremont Automotive Products, Inc., of Chicago. Of special importance today, these safety devices arrest all spark and flame from truck, bus and automobile exhausts. These two units, when used in combination, meet all government safety requirements. They are made in accordance with specifications set up by Picatinny Arsenal No. PED-1000.

Dangerous backfires and sparks carrying carbon particles in the hot exhaust stream are completely extinguished with a quenching action that absorbs heat and diffuses glowing cinders to a dust, thus eliminating any possibility of fire and explosion of vital explosive cargo.

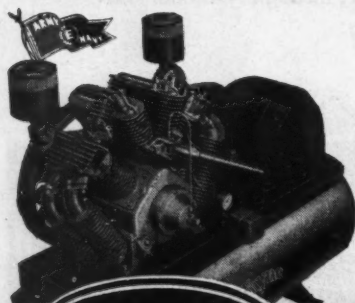
Manufactured to rigid government specifications, they are available in five standard sizes for practically every popular model truck. Special sizes may be had to order from the manufacturer.

All trucks carrying explosive materials should be equipped with this type Flame Baffle and Spark Arrestor. In addition, many conveyances in danger zones or trucks transporting gasoline, ammunition, fuel oil and similar cargo can add to the safety of the highway with these easily installed safety features.

Rubber Substitute

A rubber substitute that can be made in paint factories from vegetable oils and without use of critical materials is said to be suitable for food-jar rings, cements, stoppers, erasers, floor mats, tapes and other civilian and war products. Known as Kem-Pol, it was developed by the Sherwin-Williams Co., paint manufacturers, and is already being produced in carload lots in the company's Chicago plant.

A wide variety of war and civilian applications is indicated for Kem-Pol and among the uses suggested are treads, mats, hose, braided tubing, pads, erasers, food closures, gaskets, felting, fabric coatings, tapes, sealing compounds, adhesives, stoppers and cements.



WAYNE QUALITY PROVED!

NEVER in Wayne's history has the quality of Wayne manufacture had such a chance to prove itself as in this emergency. Wayne Pumps and Air Compressors are continuing to function satisfactorily everywhere, proving the soundness of their basic engineering and construction. Wayne Compressors are available under Government regulations.

THE WAYNE PUMP CO., FORT WAYNE 4, IND.

Wayne

AIR COMPRESSORS

Preventive medicine

TO KEEP 'EM HEALTHY

100,000,000 "shots" of *preventive medicine* a year for our armed forces—that's Uncle Sam's prescription to keep 'em healthy.

Administered by the finest medical corps, specialized shots for typhoid...tetanus...yellow fever...cholera...and vaccination for smallpox...are helping to prevent germs from thinning the ranks of our fighting men.



International News Photo

Preventive maintenance

TO KEEP 'EM ROLLING

1,500,000,000 "shots" of lubrication a year—that's the prescription of *preventive maintenance* for civilian cars and trucks to keep 'em rolling!

Administered by users of ARO, the finest lubricating equipment, specialized shots for starter...generator...fan...clutch...differential...transmission...and other vital

lubrication points...help to prevent break downs in essential motor transportation on the home front. The Aro Equipment Corporation, Bryan, Ohio.



Resumes Sales Post

Harry M. Ramsay has resumed the position of assistant sales manager of Fisk Tire division of United States Rubber Co., it has been announced by J. C. Ray, sales manager of the Fisk Division. Ramsay returns to his former post after two years as manager of the company's fuel cell department at Detroit.

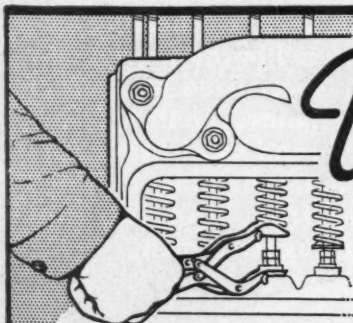
Named District Manager

The appointment of P. C. Franzini as Dallas district manager for the Whiz Automotive Division of the R.

M. Hollingshead Corp. has been announced by L. M. Olson, general sales manager. Franzini, who was formerly associated with the company and later with Telegraph Delivery Service, will supervise distribution of the company's automotive products in Texas and New Mexico.

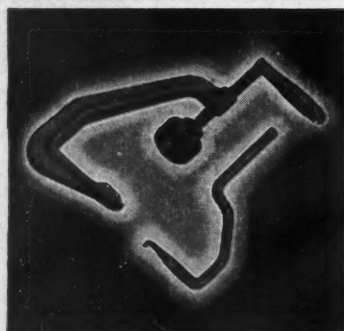
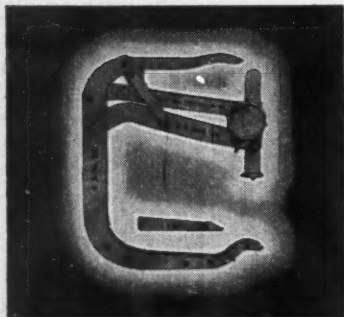
Heads Detroit Sales

Ketchel F. Morlen has been appointed manager to handle U. S. Tire sales for the Detroit district, it has been announced by A. B. Fennell, sales manager of U. S. Tire Division of United States Rubber Co.



Valve service

WAS NEVER MORE IMPORTANT
THAN IT IS TODAY



★ You'll be doing your customers a real service if you sell them complete valve service jobs regularly. It will prolong the life of their motors and at the same time help in the conservation of gas and oil. You know this . . . tell your customers!

K-D 380

A sturdy, versatile Compressor to handle valve-in-head and most L-head motors on the road today. Exclusive, automatic depth adjustment (by means of geared hand wheel) and quick operating handle make it fast and easy to operate. Two sets of jaws, as shown. Opening 10" x 10 1/4".

K-D 900

Designed for low cover-plate openings and low-hung manifolds, the 900 is *right* for motors serviced under the fender. Only 8 3/4" long. Exclusive auxiliary jaws swing into position, as shown, for extra high lift when required. Total 3" parallel lift. Tempered jaws adjustable.

K-D 920

This set pulls guide assemblies from Ford motors no matter how tightly they're stuck. (Ford 85 H. P., Mercury, Lincoln-Zephyr, Tractor, Ford 4 and Ford 6). Driver (lower) removes guide retainers and Puller (upper) pulls assemblies up and out without fuss or delay. Drop forged Puller is really strong. Don't waste hours on this tough job . . . get a K-D 920 Set.

See, price and buy K-D TOOLS at your jobber's. Write for new Catalog. "Care for your car . . . for your country."



K-D TOOLS... "THE HUSTLERS FOR YOUR TOOLBOX"

K-D MFG. CO.

Lancaster, Pa.

Hamilton, Ont.



"Say we melt the old wrench, scrap the motor, call in a bunch of doctors and hire a nurse to kiss your knuckle—then will you get back to work?"

Rubber Substitutes

R-196, Syntoflex, and a synthetic rubberized strip material are three new sealing materials developed by Felt Products Mfg. Co., Chicago, Ill.

The advantages claimed for R-196 Reclaimed Rubber Material are that it has very high water-resistant qualities and that it will resist compression and abrasion, especially where high tensile strength and tear resistance are not essential. It can be supplied in strip form for uses where severe conditions are not encountered.

Reclaimed Rubber Material R-196 is recommended for use as pads of various kinds, under headlights, tail-lights and all attachments on body; for electrical conduit work; or for gaskets for water applications or other non-severe conditions where a soft seal would be required. No crude rubber is used in the mix in making this semi-critical material.

The Reclaimed Rubber Sheet R-196 can be supplied in plain gasket form only, and is available in thickness from .020 to .125 in. The hardness range is from 55 to 80 shore durometer.

Cold-Weather Lube

The Lubaid Co., Milwaukee, Wis., is offering dealers a brand new item, E-ZE START, a new modern penetrant and pour-point depressant. E-Ze Start is an extreme-pressure petroleum base product, which is recommended for easy starting in sub-zero temperatures, thereby saving battery strain. E-Ze Start has a definite value whether a car is started fifty times daily, once a day, once a week, or once a month.



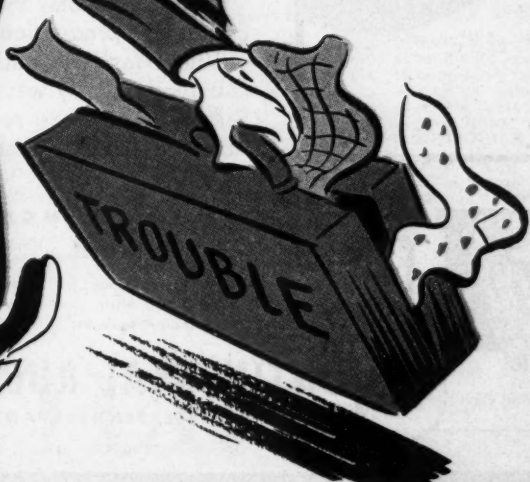
Goodbye LITTLE DRIP!

It's Goodbye "Little Drip" when you install those time-proven, quality-tested, Fel-Pro Engine Gaskets . . . Metallic Pump Packings . . . and any of the many other Fel-Pro Sealing Materials.

It pays to see your Fel-Pro Jobber First! For, while our Military and War Industry requirements are taking huge quantities of Fel-Pro materials, every effort is being made to keep our Jobbers supplied with the Gaskets YOU NEED TO KEEP AMERICA'S TRANSPORTATION ROLLING!

So to Save Time . . . and make sure you get the right gaskets for the job . . . see your Fel-Pro Jobber First! Felt Products Mfg. Co., 1521 Carroll Ave., Chicago 7, Illinois.

LEMME OUTA
HERE....HE'S
PUTTING IN
FEL-PRO
GASKETS!



VITALIC

*Fan belts
and
radiator
hose*



40 YEARS EXPERIENCE

is incorporated in every Vitalic product, whether war materials or civilian goods. That Continental has done a good job producing war materials is evidenced by the Army-Navy "E" Flag and Star for sustained excellence in production. ★ Production of Vitalic fan belts and radiator hose is limited only by war activities, and Vitalic jobbers are receiving their full share of war-time production.



C

Baltimore, Md.
Boston, Mass.
Buffalo, N. Y.
Chicago, Ill.
Cincinnati, Ohio

Cleveland, Ohio
Dallas, Texas
Dayton, Ohio
Detroit, Mich.
Indianapolis, Ind.

Kansas City, Mo.
Los Angeles, Cal.
Memphis, Tenn.
Milwaukee, Wis.
New York, N. Y.

Philadelphia, Pa.
Pittsburgh, Pa.
Rochester, N. Y.
San Francisco, Cal.
St. Louis, Mo.

CONTINENTAL RUBBER WORKS

ERIE, PENNSYLVANIA, U. S. A.

Truck Conversions

(Continued from Page 33)

aligning ball bearing in which the drive shaft turns, was set back approximately 12 in. to reestablish proper support for the drive-shaft assembly.

The front drive shaft, which in this case was of tubular type, was cut at the universal yoke, a 5-in. section removed, and the yoke welded back on the shaft. The lengthening of the rear drive shaft in proper ratio to the frame extension was a bit more complicated.

The shaft and the section to be added were placed in a special jig, and spot-welded together. A home-made affair, the jig referred to was constructed by welding a 6-ft. length of 3 by 3 angle iron to the flat surface of a salvaged brake drum. Placed corner down to form a trough, the angle iron is rigidly supported on each side by rectangular pieces of steel welded to trough and drum.

After spot-welding, the lengthened shaft was put into a lathe equipped with a tail guide and center aligner. When trued up, the shaft was arc-welded permanently into position, machined to remove excess metal resulting from the weld, and balanced. To provide rigidity in proportion to its increased length, the frame was reinforced with angle-iron "stiffeners" in the manner previously described.

Not long ago, East Coast converted a 159-in. wheelbase chassis, mounting a stake body, into a 134-in. wheelbase tractor for hauling a tank-equipped semi-trailer.

In this instance a 25-in. section was cut from the frame, which then was electric-welded together and reinforced with angle irons. In this case, the center cross-member and drive shaft were removed, the latter being replaced by a shorter shaft out of stock. The method used for drive-shaft shortening must depend, of course, on the type of construction involved.

Obviously, these various conversions bring with them body mounting and demounting orders. In recent months another volume-builder has been the conversion of panel-body jobs into "pick-up" bodies, which, locally, are scarce but much in demand.

East Coast is particularly well-equipped for carrying on its chassis-conversion and its general repair work. Adjoining the stockroom is an 18-ft. by 25-ft. machine shop separated from the rest of the garage by a wire-mesh partition.

Included in this shop's equipment are a lathe with accessory tools for thread-cutting, reaming and electric generator and starting motor work. Two portable valve refacers, two portable valve-seat grinders, bench grinders, a drill press, and portable

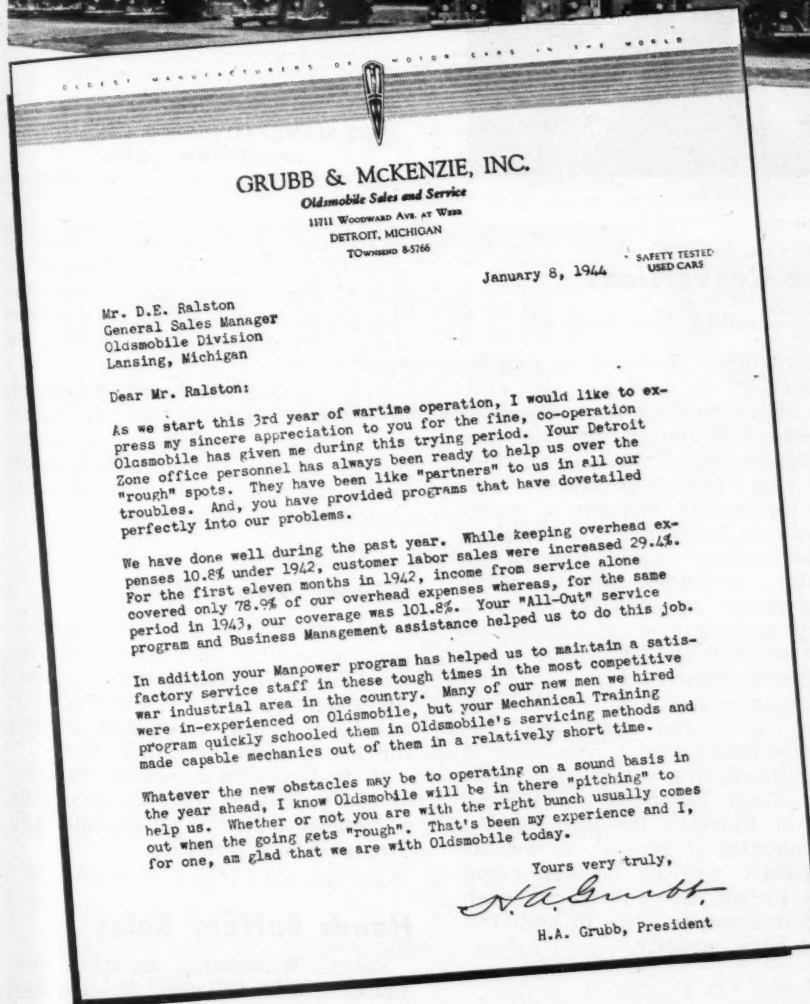
(Continued on Page 120)

HOW DEALERS FEEL ABOUT OLDSMOBILE NO. 17, DETROIT, MICH.

"Oldsmobile has...provided programs that dovetailed perfectly into our problems."



H. A. GRUBB
President
GRUBB & MCKENZIE, INC.



WHEN dealers open up their "books" and point to records like those in Mr. Grubb's letter at the left, it's plain to see that they are proud of the way they are licking their wartime problems. Oldsmobile dealers have every right to be proud of the records they have established since "Pearl Harbor." In the main, they are entering their third war year in a stronger capital position than before the war started. And they have maintained the priceless good will of their customers and prospects, by continuing to render Service to Keep 'Em Rolling.

Keeping Oldsmobile dealers in business on a profitable basis has been the objective of everything Oldsmobile has done for them since car production was first curtailed. Oldsmobile has concerned itself with every one of their wartime problems. And because Oldsmobile dealers, with a helping hand from the factory, were so successful in solving their wartime problems, they are still in business today. What is even more important, they are still in the automobile business! That's going to be a good business to stay in, with an organization like Oldsmobile.

THEY ALL SAY OLDSMOBILE HELP WAS JUST WHAT THEY NEEDED

SHREVEPORT, LA.—"I, for one, am grateful for the far-sighted attitude expressed by the Oldsmobile organization in furnishing dealers with the help and guidance sorely needed during the past eighteen months."—ROUNTREE OLDS-CADILLAC CO.

SHERMAN, TEXAS—"For the past year we have increased our Customer Labor more than 100% with the same number of mechanics and the same flat rate we were using before the war."—YOUNG MOTOR CO.

NEWARK, N. J.—"A great deal of credit for our continuing to operate so successfully is due to the help and advice given us by the Oldsmobile organization."—MALLON OLDSMOBILE COMPANY

BUTLER, PA.—"Your assistance in the operation problems constantly arising, in the securing of personnel, and the many other services rendered by Service Management has been of real value to us in maintaining our establishment."—DON LORD MOTOR CO.


YOU CAN ALWAYS COUNT ON

OLDSMOBILE

AMERICA'S OLDEST
MOTOR CAR
ORGANIZATION!

FEBRUARY, 1944

When writing to advertisers please mention Motor Age



Hurricane Bill says—

**"YOU CAN
LEARN A LOT
FROM THE OIL,
TIRE AND MOTOR
COMPANIES—THEY
USE THE BEST"**

- Only the finest ingredients go into Hurricane Auto Shampoo. That's why it turns out the brightest wash jobs—and why it gives so much customer satisfaction.

USE **HURRICANE** *Auto Shampoo*

Fast and easy! Removes the grease but harmless to finish, paint, chrome. Gives a high luster, drains quickly, leaves no streaks.

Send for **FREE Sample**
(Enough for Four Washes)
And **FREE 8-Page Booklet**
On Modern Method of Car Washing

Order From Your
Local Jobber or Distributor

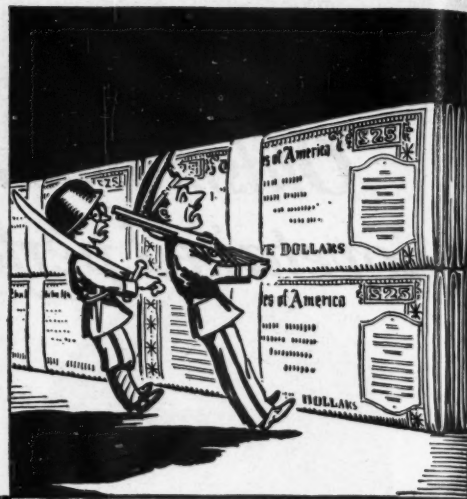
LAKESIDE PRODUCTS

343 SOUTH DEARBORN ST.
CHICAGO 4, ILLINOIS

BUY MORE WAR BONDS

*The Wall that
will Stop Them*

... These also do
a good "Stopping Job"



BRAKE PARTS BRAKE FLUID BRAKE TOOLS

EIS MANUFACTURING CO., INC.
MIDDLETOWN, CONN.

Truck Conversions

(Continued from Page 88)

electric drills in ¼-in., ½-in. and ¾-in. sizes.

The shop's welding apparatus consists of a 300-amp. arc welder and two oxy-acetylene units, one of which is of the carbide-generator type. Other equipment includes a motor tune-up unit, an exhaust-gas analyzer, a brake relining machine (rivets and derivets), a Diesel injection-nozzle testing device, a condenser tester, a battery recharger of 12-battery capacity, an ampere and voltage tester for starter-generator work, a magneto remagnetizer, a 1/10-gasoline mileage tester, and a fluid ball for hydraulic brake work. The shop is well-equipped, also, with special tools.

East Coast Equipment Co.'s shop is one of Florida's busiest. Day-by-day promotion of general, as well as specialized, service business and proper tooling to do correctly each job, as it comes in, help to keep volume at peak capacity.

Appointed Vice President

Franklin Transformer Manufacturing Co., with headquarters in Minneapolis, has appointed a new vice president in charge of sales to supervise merchandising activities,

according to an announcement by Guy L. Pugh, president. Named for the new post is J. C. Hammond, formerly with National Battery Co., St. Paul.

For the past six years, Hammond, at National Battery, has held executive positions involving merchandising of storage batteries and supervising the nation-wide distribution of battery service equipment.

Given Export Post

John F. Mauro, who until the German occupation of western Europe was European manager for another American automobile manufacturer, has been named a regional director for The Studebaker Export Corp.

R. A. Hutchinson, general manager of the unit, said Mauro's immediate assignment would be an extended trip through South America.

Heads Battery Sales

Roland Whitehurst, assistant sales manager of The Electric Storage Battery Co. since 1940, has been assigned the title of sales manager, effective Jan. 1, 1944.

Whitehurst has been in the employ of the company since 1908, and was manager of its Washington branch for 20 years.

* EACH
A COUPON
PRODUCES UP TO
1/2 GALLON
EXTRA



†50,000
MILES
WITHOUT
OIL CHANGE

YOUR CUSTOMER'S MOTOR PURRS WHILE PRECIOUS GAS GOES FURTHER

* OILDEX-Oil Dilution Extractor uses up crankcase gases and vapors to reduce gasoline consumption. Quicker cold weather starting. Eliminates sticky valves and reduces "carbon." Prevents those obnoxious crankcase fumes.

† FILTREX-Oil Filter gives triple filtration to remove solid impurities and foreign matter from the oil—reducing or eliminating necessity of oil changes, when properly serviced.

(Above statements are based on actual operating records of cars and trucks in proper service for a number of years.)

MOTOR ECONOMY PRODUCTS, Inc.
407 West 36th Street, N. Y. 18, N. Y.

**JOBBERS—
DEALERS**
Write for discounts
and complete details.

PROMPT SHIPMENT of MASTER RECAMS

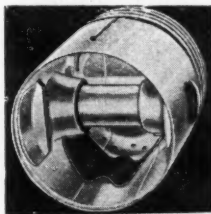


MASTER RECAMS prolong the life of pistons, save oil and conserve vital war materials. They quiet noisy motors.

STOP PISTON SLAP
OIL PUMPING and
MOTOR NOISE

Easy to install in late model cars.

**ONLY
50c
EACH**



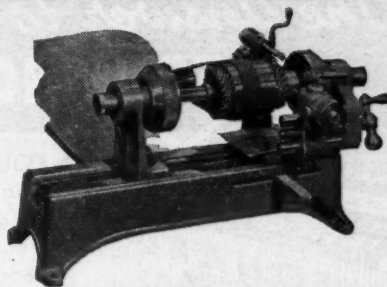
To Get Quick Action—

As territory men are handicapped by tire and gasoline restrictions, please write or wire for illustrated folder and full information and MAIL YOUR ORDER.

WHERRY ENGINEERING COMPANY
3227 Morganford Rd. ST. LOUIS, MO.

9 CONVENIENT WAREHOUSES to Serve You

Los Angeles, 1408 S. Grand Ave.
Minneapolis, 220 S. 10th St.
New York City, 249 West 64th St.
Charlotte, N. C., Southern Friction Materials Co.
Portland, Ore., 416 N. W. 14th Ave.
Seattle, Wash., 1805 E. Pike St.
Toronto, Ontario, Canada, 191 Queen St.
San Francisco, 440 Golden Gate
Chicago, 2618 S. Michigan Ave.



TRUCUT

Makes Commutators Like New

With the TRUCUT commutators are machined concentrically with the bearing surfaces of the shaft, providing a perfect surface for the brushes to ride on. Only one set-up of the armature is required.

TRUCUT will operate at a profit in any shop. Rapid, accurate, economical, it comes to you complete—no expensive extra attachments to buy.

Let us tell you about the experiences of some of the many shops that are TRUCUT-equipped. See your jobber, or write

FRANK N. WOOD COMPANY

212 W. St. Paul Ave., Waukesha, Wis.
Pacific Coast Address—1340 S. Flower St., Los Angeles 15, Calif.
Also TRUCUT Mica Undercutter, Tailstock Rest and General Purpose Press

TRUCUT Armature Lathe & Undercutter

Maintenance Short Cuts FOR SERVICE SHOPS



Prolong Tire Life By Keeping Your Floors Grease-Free!

Grease and oil are enemies of rubber . . . rapidly deteriorate it. When deposits are permitted to accumulate on garage, repair shop and service station floors, they cut down tire mileage.

So help conserve rubber . . . and avoid fire hazards and accidents at the same time . . . by keeping your floors clean the safe, easy, time-saving way with

OAKITE PENETRANT

Merely apply recommended solution of this FAST-WORKING, safe, water-soluble material as directed, allow it to soak, brush lightly, and hose off. That's all you need to do to make floors GREASE-FREE, bright, new-looking. Write today for NEW, FREE 12-page booklet giving details on this and many other essential maintenance cleaning jobs.

OAKITE PRODUCTS, INC., 24C Thames Street, NEW YORK 6, N. Y.
Technical Service Representatives in All Principal Cities of the United States and Canada

OAKITE CLEANING

MATERIALS METHODS SERVICE



FOR EVERY CLEANING JOB

The Answer to FOULING TROUBLES



**IN PACKAGED
SETS TO FIT
CHEVROLET**

Leonard flat edged electrodes with spark gap control make frequent regapping unnecessary.

YOU can practically eliminate fouling troubles due to slower driving at Wartime speeds by installing the correct Leonard.

Leonard Packaged Sets to fit Chevrolet give you complete coverage from 1933, including passenger cars and light and heavy duty trucks—10 and 14 mm.

Leonard's Air-cooled center electrode dissipates more heat, enabling Leonards to outperform and outlast the ordinary spark plug.

Send for our new "Duration" Catalog for complete information.

LEONARD SPARK PLUG CO., INC.
NEWARK, N. J.

LEONARD *air cooled* **SPARK PLUGS**

NEW! A "ONE MAN" Toe-In Measuring Gauge!

\$5.95



**Only
10 inches
Long**

Quicker and Easier to Use!

The Micro-Linor Toe-In Measuring Gauge requires only one man to operate it. Just attach the grippers to the rims and take front reading. Then roll vehicle forward and take rear reading.

Quicker — because gauge remains in same spot for both readings. All done in less than 2 minutes. Simple. Extremely accurate. Fits any vehicle. Every mechanic should own one.

Micro-Linor Service Corporation
1623 W. Fort St. Detroit 16, Mich.

**WRITE FOR
CATALOG**

Donze Steps Up

A. M. Donze, factory manager of The Timken Roller Bearing Co., Canton, Ohio, for the past eight years, has become vice president in charge of production. The advancement was made at a board meeting Dec. 18.

manager of the Detroit area, according to an announcement by J. B. Wagstaff, general sales manager, DeSoto Division, Chrysler Corp.

Herpolsheimer succeeds L. J. Hannah, who has resigned to establish his own business.

He joined DeSoto in 1939.

At the same time, H. M. Richey, assistant factory manager, was promoted to factory manager.

Returns to DeSoto

Paul Herpolsheimer, Jr., former DeSoto executive and lately under assignment to the Signal Corps of the U. S. Army, has been appointed regional

Radio Plant Opens

B. W. Cooper, general manager of the Delco Radio Division of General Motors Corp., in Kokomo, Indiana, recently made the following announcement:

Assembly of radio and electronic equipment will be started in Terre Haute, Ind., about Feb. 1 by the Delco Radio Division of Kokomo. Four buildings of the Vigo Ordnance plant have been leased for the work. Approximately 500 persons will be employed at the peak of production schedules now laid out.

Portable Analyzer

The Model 1019 Weidenhoff Portable Analyzer is a compact, self-contained testing unit for checking automotive electrical systems and overall engine performance. Makes possible field tests, since no electric current source is necessary, the latter being supplied by the battery in the motor vehicle or by an outside battery. The unit checks both 6-and 12-volt systems.

Instrument panel incorporates a voltmeter, tachometer and ohmmeter in a single meter, as well as an ammeter and cam-angle meter in another single meter. Also provided is a breaker motor for coil testing, selector switch, variable spark gap, coil test, ammeter shunt binding post, plug-in openings for voltmeter scales, ohmmeter cam angle and tachometer.

Removal of cover exposes instrument panel to which all connections are made, with exception of the special ground clamp leads, which are plugged into the rear of the unit. All necessary test leads, special fittings adapters, as well as a vacuum gage, compression gage and timing light, when not in use, are kept in compartments in the case cover. Joseph Weidenhoff, Inc., Chicago, 24, Ill.

Heads Servicemen

Virgil Hudson, of the Hudson Auto Repair, was recently elected president by the Kansas City, Mo., Automotive Trades Association. Glen Johnson, of the Kansas City Brake Service, was named vice president; John Heilman, of Heilman's Hillcrest Automotive Service, secretary; and John Rode, of Rode Brothers, treasurer.

Where
Secure
Seals Are
Vital

VICTOR
GASKETS, OIL SEALS,
GREASE RETAINERS

Since 1897

**UNITED STATES
ELECTRICAL TOOLS**

have never swerved from their
original standards of **QUALITY
AND SERVICE.**

**THE UNITED STATES
ELECTRICAL TOOL CO.**

CINCINNATI, OHIO

THERE IS A GUARANTEED

Pedrick
ENGINEERED SET

of **PISTON RINGS**
FOR EVERY CAR, TRUCK,
BUS, AND TRACTOR



How to Protect SYNTHETIC TIRES!

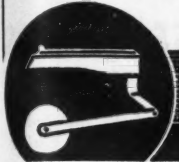
The one and only sure way of protecting synthetic tires is to correct the chassis defects responsible for the wheels not rolling true. If you would like to know how to go about it, send for circular: "How to Lend a Helping Hand to Synthetic Tires."

Micro-Linor Service Corporation

1635 W. Fort St.

Detroit 16, Mich.

WRITE FOR CATALOG



MICRO-LINOR

Patented "Tracer-Wheel" Principle



When tires show wear in spots, it's a sign that the wheel assembly is heavier at the places where the spotty wear occurs. The remedy is to balance the wheels with L & H Weights. This is a service that you can profitably sell to customers who are anxious to save their tires.

SEND

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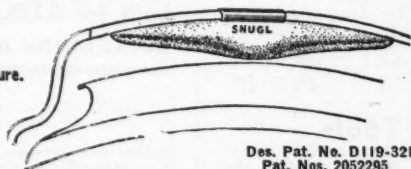


Wheel Balancing Weights

7 Rules for Longer Tire Life

Tell Your Customers to

- 1—Operate at slower speeds.
- 2—Turn corners carefully.
- 3—Maintain uniform air pressure.
- 4—Guard against overloading.
- 5—Avoid bruising bumps.
- 6—Recap smooth treads immediately and



Des. Pat. No. D119-321
Pat. Nos. 2052295
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7—Balance all tires with "SNUGLS".

The Balance Weights the Government uses. "Snucls" cannot rattle or work loose. Easy to install—streamlined to make dynamic balancing an easy and quick job. Sizes 1/2 oz. to 32 oz. now available. Contact your Jobber or write us direct.

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Western Distributor: Kenneth V. Mills, 910 W. Pico Blvd., Los Angeles, Cal.



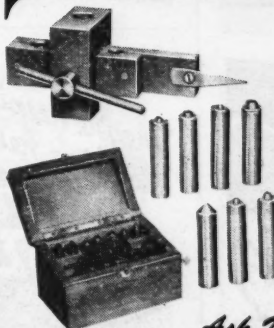
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Smooths hardest tungsten and platinum-iridium points.

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YOU CAN BEND AND TWIST IT!

Nothing like it for dressing and cleaning all electrical contacts and commutators, etc. "Cuts" any metal like an abrasive stone. Thin, flexible—works in confined spaces. Won't break when you bend and twist it. No short circuit. Size 4 1/4" x 3/8" List 15c each. Ask your jobber for Rimac Flex-Stone.



THIN, WEAK SINGLE FLARE

OK Smooth, Heavy DOUBLE FLARE

Makes the standard 45° double-lap flare used in the automotive, aviation, refrigeration and other fields, on steel, copper, aluminum and Monel metal tubing. Comes in sturdy wooden tool box.

Ask Your Jobber

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AUTOMOTIVE



Quality
REPLACEMENTS

NOW—More than Ever Before
IT PAYS TO LINE UP WITH LION
QUALITY • DEPENDABILITY • SERVICE



Write for Catalog

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MONTREAL

IT'S
Easy
TO FLARE
BUNDYFLEX
Original Equipment
COPPER COATED METAL TUBING

WITH OUR
FLAREMASTER
Portable
FLARING TOOL

Gives You a
DOUBLE-STRONG
double-lap FLARE

THIN, WEAK SINGLE FLARE

OK Smooth, Heavy DOUBLE FLARE

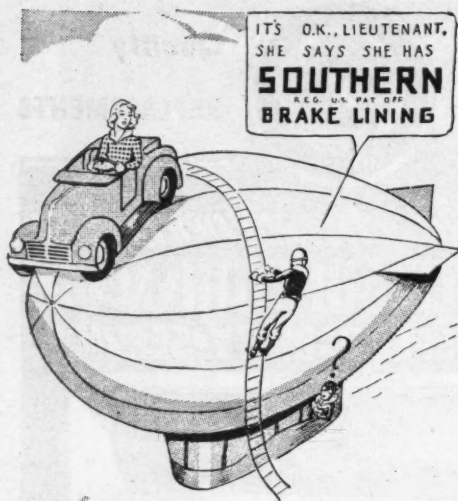
Makes the standard 45° double-lap flare used in the automotive, aviation, refrigeration and other fields, on steel, copper, aluminum and Monel metal tubing. Comes in sturdy wooden tool box.

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FRICTION MATERIALS CO. - CHARLOTTE, N.C.

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Every mechanic should own one of these tools. The accumulation of muck and scale is quickly removed and the brake cylinder polished to a mirror finish in a few seconds.

YOUR MECHANICS can eliminate wasteful trips to have brake cylinders honed. Do this job in your own shop. The tool will service 80% of cars manufactured and sells for \$3.25 from your jobber and is available on an AAS priority rating or higher.

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The **HYLAND Manufacturing Co.**
818 JOHN ST., PORTSMOUTH, OHIO

Buffalo
MUFFLERS

Stop that Noise!

BUFFALO PRESSED STEEL CO., INC. - YOUNGSTOWN, OHIO

**David G. Kelly Chosen
To Head NADA During 1944**

Meeting at Detroit, Jan. 24-26, the National Automobile Dealers Association elected David G. Kelly, of Grand Forks, N. D., president of the organization for the current year. Kelly succeeds to the office held last year by David E. Castles.

Lynn S. Snow, of Oak Park, Ill., was elected first vice-president, and C. B. Robertson, of Richmond, Va., was re-elected treasurer. E. Jack Beatty, of Denver, Col., was named secretary.

Carrying out its announced intention to reorganize the executive committee, the NADA increased the number of regional vice-presidents from six to twelve, and these vice-presidents took over the duties of the executive committee.

The regional vice-presidents are A. J. Dingeman, Southern California; E. Jack Beatty, Colorado; Harry Sommers, Georgia; Lynn S. Snow, metropolitan Illinois; S. J. Rodgers, Louisiana; A. E. Summerfield, Michigan; D. E. Castles, Missouri; W. L. Mallon, New Jersey; D. G. Kelly, North Dakota; R. C. Jones, Pennsylvania; H. A. Lanphear, Rhode Island; and C. B. Robertson, Jr., Virginia.

Firm Shortens Name

The Titeflex Metal Hose Co. of Newark, N. J., will hereafter be known as Titeflex, Inc. The change has been announced by Mr. Elbert E. Husted, president of the company.

Since 1914, the Titeflex Metal Hose Co. has specialized in the manufacture of flexible metallic tubing for the conveyance of fluids and gases.

Grease Fitting Tools

These ingenious devices do the work of several tools, and are extremely convenient, because several different grease fitting wrenches all are combined in one tool. They fit either Alemite or Zerk, and may be used for threading or extracting. No. NR-243 is size 2½ in., No. NR-310, 3½ in. A rating of AA-5 or higher is required for the purchase of these tools.

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The Quick and Easy
ZECOL
Way

ZECOL Inc.
Sole Manufacturers
Milwaukee, Wis.

Keep 'em Rolling

WITTEK
Noc-OUT
HOSE CLAMPS

The standard of the industry. Quick-tightening, perfect leak-proof hose connections, for original equipment and replacement. For Radiator, Heater, Booster Brakes and High Pressure hose connections. Wittek Manufacturing Co., 4305-15 W. 24th Place, Chicago, Ill.

WITTEK **Noc-OUT**
HOSE CLAMPS

GLOBE
SPINNING POWER
TRADE MARK REG.
BATTERIES

MA-244
built for REPLACEMENT SERVICE
GLOBE-UNION INC., MILWAUKEE, WIS.

Make Big Profits on Small Investment in
SHURHIT
IGNITION
PARTS

Ask your Shurhit jobber or write us for details on General Ignition Assortments of fast-moving parts...
Contact Points...
Condensers...
Rotors... Caps...
Coils...
Switches, etc.

SHURHIT PRODUCTS, INC.
Waukegan, Ill.

Snap-on Tools
THE CHOICE OF BETTER MECHANICS

The Standard
OF BATTERY TESTING
INSTRUMENTS

Edelmann
No. 40 and 55 Thermo
"Break-Not" Hydrometers

Most dependable and accurate.
Over 500,000 in service. Tests
storage batteries in cars or
on the line. No. 55 especially
designed for use in con-
junction with Rapid Battery
Chargers.

**YOUR JOBBER WILL
QUOTE PRICES**

E. EDELMANN & CO.
CHICAGO • ILLINOIS

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WARNER COOLING SYSTEM PRODUCTS



New Improved Warner Radiator Cleaner
New Improved Warner Cooling System Protector
New Improved Warner Liquid Solder
New Improved Warner Service Cleaner

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919 South Michigan Ave., Chicago, Illinois

FITZGERALD
GASKET CRAFTSMEN SINCE 1906
GASKETS

*The complete line
that completely satisfies*

The Fitzgerald Manufacturing Company
Torrington, Conn.

TOP QUALITY.. LOW PRICE

Wiry Joe

Wire and Cable
Pawtucket, R. I.

BUELL AIR HORNS

AVAILABLE ON PRIORITY



Manufacturers of High Pressure Air Horns for cars, trucks, buses, boats and railway trains since 1912, our production is now devoted entirely to the War Effort. After Victory Buell Air Horns will again be available for old and new cars.

BUELL MANUFACTURING CO.
2991 Cottage Grove Ave., Chicago, Illinois

Takes Dallas District

The appointment of P. C. Franzini as Dallas District manager for the WHIZ Automotive Division of the R. M. Hollingshead Corp. has been announced by L. M. Olson, general sales manager. Franzini, who was formerly associated with the company and later with Telegraph Delivery Service, will supervise distribution of the company's automotive products in Texas and New Mexico.

Appointed Sales Chief

Roy D. Adams has been appointed general sales manager of Chanslor & Lyon Co. effective Jan. 1, 1944, with headquarters at the general offices of the company, San Francisco, Cal.

Adams joined the company as a delivery boy at the Oakland, Cal., store in 1921. In 1923 he was assigned to a sales territory. Since 1934 he has been sales manager of the Southern California Division. Ralph F. Dyer succeeds Adams as sales manager of the Los Angeles store.

Heads Tire Sales

R. A. Maxwell has been appointed in charge of all tire sales except airplane in the combined Automotive, Aviation and Government Sales divisions of The B. F. Goodrich Co., it is announced by G. E. Brunner, division general manager.

Maxwell has been with the company for 10 years, mainly in truck and bus tire sales. He has been on leave during the last year while serving the Office of Rubber Director in Washington.

You Can Depend on
AMERICAN HYDRAULICS
Jacks

American Hydraulics Inc.
Sheboygan, Wisconsin

BLUE CROWN
SPARK PLUGS

Air Cooled

Always Dependable for Severe Service

Finned Shell SAVES GAS

LARGER ELECTRODES GIVE LONGER LIFE

Ask your jobber
MOTOR MASTER PRODUCTS CORP.
1800 Winnemat Ave., Chicago, U.S.A.
Export Distribution
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FOR WARTIME LUBRICATION

... YOU NEED
AND CAN STILL GET

★ **DOOR-EASE**
STAINLESS STICK LUBRICANT
DRIPLESS OIL

★ **RU GLYDE**
RUBBER LUBRICANT
from leading Jobbers

AMERICAN GREASE STICK CO.
MUSKEGON, MICHIGAN

★ **KEN-TIRE TOOLS** ★
KEEP AMERICA'S KEY TRANSPORTATION ROLLING!

★ **KEN TIRE TOOLS** ★

SEE YOUR LOCAL JOBBER OR WRITE FOR ILLUSTRATED LITERATURE

THE KEN TOOL MFG. CO. AKRON, OHIO

GENERATOR RE-BUILDERS!

GET HASCO'S QUOTATIONS FIRST for lowest prices on good used parts:

Armatures	Bolts
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Drive Housings	Commutators
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V 8 Coils 33-36

Complete units suitable for rebuilding
We stock only genuine used parts. All are thoroughly tested and cleaned with the most modern methods and equipment. Each part carries our money-back guarantee.

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"Largest dismantlers and salvagers of Automotive Generators and Starters"

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